CORRECTIVE ACTION/PERMITTING
PERMIT CORRESPONDENCE

PAD980550594
SUNOCO INC (R&M) MARCUS HOOK REFINERY
TSD
CORRECTIVE ACTION/PERMITTING

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Box
8 of 8

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

SUBJECT: Sun Refining and Marketing Company
Marcus Hook, Pennsylvania
PAD 98 055 0594

DATE: 6-1-92

FROM: Paul J. Gotthold, Acting Chief
PA Permit Section, (3HW51)

TO: Bruce P. Smith, Associate Director
RCRA Programs Office (3HW03)

Thru: Robert L. Allen, Chief
Waste Management Branch (3HW50)

Attached for your concurrence is the draft HSWA permit for Sun Refining and Marketing Company, Marcus Hook, Pa. The draft HSWA Corrective Action permit conditions include groundwater monitoring activities, integrity assessment, soil sampling and RCRA Facility Investigation at specified Solid Waste Management Units (SWMUs). In addition, the draft permit will require the Permittee to submit both a copy of its annual Waste Minimization Certification and a description of its Waste Minimization Program. Further, the Permittee is required to implement stabilization activities at the Middle Creek Drainage System (SWMU #96), as an interim measure. The Permittee must submit to EPA a Stabilization Measure Workplan (SM) for the indicated SWMU. The SM Workplan shall be in accordance with RCRA, its implementing regulations, and relevant guidance documents. Based on the results of these investigations and the implementation of the interim measure (stabilization) at Middle Creek, EPA will evaluate the need for corrective measures.

The facility participates 33/50 Program. The subject facility's operating permit was issued by PADER in FY-90.

Addressees:

		Initials	Date
B. Okorn	(3HW51)	BgO	6/1/92
H. Lee	(3HW51)	SHL	6/1/92
for P. Gotthold	(3HW51)	SHL	6/1/92

M. Coe	(3RC00)	Rosa Hatcher for MC	6/29/92
R. Allen	(3HW50)	R Allen	7/6/92
B. Smith	(3HW03)	B Smith	7/14/92

FACT SHEET
FOR CORRECTIVE ACTION AND WASTE MINIMIZATION PERMIT

SUN REFINING AND MARKETING COMPANY
MARCUS HOOK, PA
PAD 980 550 594

This fact sheet has been developed for the U.S. Environmental Protection Agency's (EPA) portion of the full Resource Conservation and Recovery Act (RCRA) permit which EPA proposes to issue to Sun Refining and Marketing Company, (the Permittee) for its facility located at Delaware Avenue and Green Street, in Marcus Hook, Pennsylvania (the "Facility"). The Pennsylvania Department of Environmental Resources' (PADER) portion of the permit was issued on July 6, 1990. This fact sheet was prepared in accordance with the requirements of 40 C.F.R. § 124.8.

A. PURPOSE OF THE PERMITTING PROCESS

The purpose of the permitting process is to afford the EPA, interested citizens and other governmental agencies the opportunity to evaluate the ability of the Permittee to comply with the applicable hazardous waste management requirements promulgated under the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), 42 U.S.C. §§ 6901-6987. EPA is required to prepare a draft permit which sets forth in one concise document all the applicable requirements with which the Agency intends to require the Permittee to with comply during the ten-year duration of the permit. The provisions of the draft permit prepared by EPA under 40 C.F.R. § 124.6 are based on the Administrative Record prepared pursuant to 40 C.F.R. § 124.9. The public is given forty-five (45) days to review and comment on the draft permit conditions (including the Administrative Record) prior to EPA taking any final action on EPA's draft permit.

B. PROCEDURES FOR REACHING A FINAL DECISION

Section 7004(b) of RCRA and 40 C.F.R. § 124.10 require that the public be given forty-five (45) days to comment on each draft permit prepared under RCRA. The comment period will begin on_____ and will end on_____. Any person interested in commenting on this draft permit must do so within this forty-five (45) day comment period.

All persons wishing to comment on any of the permit conditions must submit written comments to the Environmental Protection Agency (EPA), Region III, at 841 Chestnut Building, Philadelphia, Pennsylvania 19107, Attention: Mr. Stephen Hon Lee, (3HW51). Comments must include all reasonable

references, factual grounds and supporting material.

In the event EPA receives written objections to the draft permit conditions or permit application and a request for public hearing within the comment period referenced above, a hearing shall be scheduled at a location convenient to the population center nearest the facility. Public notice of the public hearing shall be given at least thirty (30) days before the hearing. (40 C.F.R. § 124.10) Any requests for a public hearing and/or any written comments in opposition to the draft permit should be addressed to Mr. Stephen Hon Lee, at the EPA address set forth above.

Handicapped persons with a need for special services should contact EPA far enough in advance of the hearing to enable the services to be secured.

When making a determination regarding the issuance of this permit to the Permittee, EPA will consider all written comments received during the comment period, any oral or written statements received during the public hearing (if requested), the requirements of the hazardous waste regulations of 40 C.F.R. Parts 124, 260-264, 268, and 270, the Agency's permitting policies, and HSWA.

When EPA issues a final decision to issue, deny or modify this permit, notice will be given to the applicant and each person who has submitted written comments or requested notice of the final decision pursuant to the requirements of 40 C.F.R. § 124.10. The final permit decision shall become effective thirty (30) days after the service of the notice of the decision, unless a later date is specified or review by the Administrator is requested by any person who filed comments on the draft permit or participated in the public hearing under 40 C.F.R. § 124.19. Those who failed to file comments or failed to participate in the public hearing may only petition the Administrator to review changes from the draft to the final permit decision. If no comments request a change in this draft permit, the final permit shall become effective immediately upon issuance.

Contact person at EPA for viewing the Administrative Record and/or the draft Permit is:

Mr. Stephen Hon Lee
U.S. Environmental Protection Agency
Region III (3HW51)
841 Chestnut Building
Philadelphia, Pennsylvania 19107
(215) 597-3181

C. FACILITY DESCRIPTION

1. General

Sun Refining and Marketing operates a hazardous waste storage facility at Marcus Hook, PA on the Pennsylvania/Delaware border, and on the western bank of the Delaware River. The Facility is approximately 10 miles southwest of Philadelphia and seven (7) miles northeast of Wilmington, DE. The Facility consists of two large plants; the Marcus Hook Refinery (the Refinery), which is located in Marcus Hook Borough, Delaware County, PA, and the Ethylene Complex (previously the Sun Oil plant), which is located in Claymont, DE. The Ethylene Complex is on the western side of the Facility, along the Delaware River, and is contiguous with the Refinery property. The Facility is bounded by Ridge Road to the north, Green Street to the east, the Delaware River to the south, and other industrial properties to the west. This permit is for the Marcus Hook Refinery only.

The Facility occupies approximately 400 acres of gently sloping land and has approximately 5,000 feet of frontage on the Delaware River. Land use patterns for the area immediately surrounding the refinery are predominantly industrial, with some areas of light residential use. The residential area of Marcus Hook, PA is located immediately northeast of the Facility. The residential areas of Linwood and Boothwyn, PA are located approximately one and one half miles to the north of the Facility.

Two major public transportation right-of-ways cross the Facility. Route 13 (the Wilmington Post Road) crosses the Facility parallel to the Delaware River from the southwest to the northeast and basically bisects the Refinery. The Washington-Baltimore-Penn Central railway lines also cross the Facility, approximately 1000 feet to the north of and parallel to Route 13.

Refinery operations began in March of 1902. The Facility, including both plants, employs approximately 300 people. The Refinery processes up to 165,000 barrels per day of crude oil. A majority of the crude arrives by tanker from the North Sea and African oil fields. The Refinery consists of a series of plants that carry out the processing operations necessary to process crude oil into various products. The Marcus Hook Refinery is the fourth largest producer of lubricating oils in the United States. Other products produced by the Refinery include gasoline (40 percent leaded and 60 percent unleaded), kerosene, Nos. 1 and 2 fuel oils, residual fuel oils, aviation fuel, liquefied petroleum gas, waxes, and petrochemicals

(benzene, toluene, and xylene). The basic processes used to produce the various products include cracking, distillation, reforming, cleaning, and blending. Gas streams containing hydrocarbons and sulfur that are generated are used by the Refinery as a fuel source.

The Marcus Hook Refinery generates hazardous wastes that are typical of the petroleum refining industry: petroleum refining listed wastes, spent solvents, commercial chemical products, and ignitable, corrosive, EP toxic characteristic wastes, and toxicity characteristic wastes.

2. Solid Waste Management Units (SWMUs)

The Solid Waste Management Units (SWMUs) identified in Attachment A of this Fact Sheet are subject to the continuing release provision of Section 3004(u) of RCRA, 42 U.S.C. § 6924(u). Further information on these units is available in the Administrative Record and can be reviewed by contacting Mr. Stephen Hon Lee at the address set forth in Paragraph B, above.

Based upon the review of federal and state files and site inspections, a total of 100 SWMUs and eight (8) Areas of Concern (AOC) have been identified. These SWMUs and AOCs are described in detail in Attachment A of this Fact Sheet.

SWMUs and AOCs Requiring Further Investigation

Based on a review of the State, Federal, and Facility file material and on the EPA Visual Site Inspection (VSI), conduced in August 1990 , EPA has determined that releases may have occurred at several locations at the Facility. The proposed Permit requires further investigation of the following SWMUs and AOCs:

INTERIM MEASURE

96. Middle Creek Drainage System

SWMU and AOC INTEGRITY ASSESSMENT

13. Tank No. 50 Lime Slurry Tank
15. Tank No. 55 Sludge Decant Tank
21. Filter Cake Knock-out Area
32. Impoundment Tank T-101
43. 10-4 Plant Sour Water Stripper
50. Mechanical Shop Equipment Wash Rack
53. 8-C Unit Drip Showers
55. Benzene Vapor Recovery System
59. Slop Oil Tank 132
60. Slop Oil Tank 388

61.	Ballast Water Tank W-12
63.	1A Oil/Water Separator
66.	1D Oil/Water Separator
68.	1F Oil/Water Separator
70-79.	9 and 14 Oil/Water Separators
81,82	10 Oil/Water Separators
83.	12A Oil/Water Separator
84-86.	16 Oil/Water Separators
87-94.	15 Oil/Water Separators
95.	Combined Process/Storm Sewer System
97.	Product Drip Collection Areas
100.	Used Oil Accumulation Areas
AOC B.	Underground Transfer Lines
AOC D.	Underground Storage Tanks
AOC E.	Underground Storage Caverns
AOC G.	IF Oil/Water Separator Electrical Box

SOIL SAMPLING

4.	Tank No. 4 Sludge Storage Tank
5.	Tank No. 5 Sludge Decant Tank
18.	Lime, Spent Clay, and Catalyst Loading System
19.	Sludge Receiving Trough
21.	Filter Cake Knockout Area
28.	Phillips Island Maintenance Storage Area
29.	Phillips Island Roll-Off Storage Area
30.	Phillips Island Old Drum Storage/Small Roll off Area
31.	Fire Fighter Training Area
33.	Phillips Island Surface Drainage Ditches
34.	Phillips Island Sand Blasting Area
40.	10-4 Plant Roll-Off Storage Area
51.	Dock No. 2 Recovery Well System
57.	Clay Contact Plant Area
62.	Heat Exchanger Bundle Cleaning Area
63.	1A Oil Water/Separator
64.	1B Oil Water/Separator
67.	1E Oil Water/Separator
65.	1C Oil Water/Separator
66.	1D Oil Water/Separator
69.	IF Oil/Water/Separator Feed Trench
70-79.	9 and 14 Oil/Water Separators
81,82.	10 Oil/Water Separators
84-86.	16 Oil Water Separators
98.	Aboveground Tank Containment Areas
99.	Rail Car Loading/unloading Areas and Associated Tracks
AOC A.	Refinery Spill Area
AOC F.	8-C Plant PCB Transformer Area

RCRA FACILITY INVESTIGATION (RFI)

23.	Old Sludge Basin
24.	Old Sludge Decant Basin
25.	Old 12 Plant Sludge Basin
26.	Old 18 Plant Sludge Basin
27.	Phillips Island Area
56.	Asphalt Plant Area
80.	Discharge Pipe & Excavation at 9 & 14 Oil/Water Separators
96.	Middle Creek Surface Drainage System
AOC H.	Kerosene Contamination Area

The other SWMUs and AOCs identified at the Facility are either regulated units covered by the Commonwealth of Pennsylvania portion of the RCRA permit or do not pose a potential risk for release of hazardous wastes or constituents at this time. However, if EPA receives additional information that would require further investigation of the other SWMUs, the Permit will be modified accordingly.

D. HAZARDOUS AND SOLID WASTE AMENDMENTS (HSWA)

1. Section 3004(u) Continuing Releases at Permitted Facilities

a. Background

One of the most important provisions of the Hazardous and Solid Waste Amendments of 1984 (HSWA) is the requirement that a treatment, storage, or disposal facility undertake corrective action for continuing releases as set forth in Section 3004(u) of RCRA, 42 U.S.C. § 6924(u). This section provides that:

> Standards promulgated under this section shall require, and permits issued after November 8, 1984 [the date of enactment of the Hazardous and Solid Waste Amendments of 1984] by the Administrator or a State shall require, corrective action for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage or disposal facility seeking a permit under this subchapter, regardless of the time at which waste was placed in such unit. Permits issued under Section 6925 [§ 3005 of RCRA] of this title shall contain schedules of compliance for such corrective action (where such corrective action cannot be completed prior to issuance of the permit) and assurances of financial responsibility for completing such corrective action.

The intent of Congress in establishing this new permit requirement was to correct a perceived shortcoming in the existing statute and RCRA regulations which allowed operating permits to be issued to facilities at which environmental contamination is occurring or has occurred, without the permit addressing the contamination. All permit applicants must now: (a) identify all solid waste management units at the facility; (b) identify any releases that have occurred or are occurring from these units; (c) take appropriate corrective action to clean up those releases; and (d) demonstrate financial assurance for such corrective actions. A SWMU is any discernable unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at the facility at which solid wastes have been routinely and systematically released. The provision on continuing releases was effective on the date of enactment of HSWA (November 8, 1984). Thus, a permit issued after November 8, 1984 must address this provision.

The basic standard for imposing corrective action at a Facility is protection of human health and the environment (40 C.F.R. § 264.101(a)). This Permit will address corrective action where there is or has been a release at the Facility that poses a threat to human health and the environment.

b. Implementation

The process of implementing Section 3004(U) of RCRA (40 C.F.R. § 264.101) takes place in three phases, with each phase consisting of several specific steps. The phases for implementation are as follows:

1. RCRA Facility Assessment (RFA) of need for corrective action:

   i. Submission of Preliminary Assessment

   ii. Performance of a Visual Site Investigation

2. RCRA Facility Investigations (RFI) and development of proposed programs of corrective action

   i. RFI by owner/operator to identify/characterize releases

   ii. Development of a proposed program of corrective action, if necessary, and cost

estimate

3. Corrective Measures Implementation (CMI):

   i. Establishing the program for corrective action

   ii. Demonstration of financial assurance

   iii. Conducting corrective action

Phase 1 of this implementation process, the RFA, has already been completed. Visual Site Investigations were conducted by EPA in August 1990. EPA prepared an RFA Report which contains recommendations on the need for further studies at this Facility. The draft Permit requires the Permittee to develop and submit a proposal for further site investigation and to conduct interim measures at the Middle Creek Drainage System. Based on the results of this investigation and the implementation of the interim measure at Middle Creek, EPA will evaluate the need for corrective measures. If EPA finds that further studies and/or corrective measures are warranted, EPA will propose a major permit modification for corrective measures implementation and follow appropriate procedures which include a public notice period and a public hearing, if requested.

2. Organic Air Emission Standards for Process Vents and Equipment Leaks

On June 21, 1990, EPA promulgated RCRA Organic Air Emission Standards for Process Vents and Equipment Leaks in accordance with RCRA § 3004(n), 42 U.S.C. § 6924(n). These standards (40 C.F.R. § 264. Subparts AA and BB), which became effective December 21, 1990, regulate air emissions from vents and equipment associated with specified hazardous waste management processes.

Upon review and based on the Facility's Phase 1 RCRA Air Emission Standards' (55 FR 25454) letter of March 5, 1991, the Permittee is exempt from Subparts AA and BB of 40 C.F.R. § 264 at this time.

3. Waste Minimization

Section 3005(h) of RCRA, 42 U.S.C. § 6925(h), and the regulations codified at 40 C.F.R. § 264.73(b)(9), provide that effective September 1, 1985, it shall be a condition of any permit issued that the Permittee certify no less often than annually, that the generator of the hazardous waste has a program in place to reduce the volume or quantity and toxicity of such waste to the degree

determined by the generator to be economically practicable, and the proposed method of treatment, storage or disposal is that practicable method currently available to the generator which minimizes the present and future threat to human health and the environment. Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3) and 40 C.F.R. § 270.32 (b), further provide that each permit shall contain such terms and conditions that the Administrator determines necessary to protect human health and the environment.

This Permit requires the Permittee to submit both a copy of its annual Waste Minimization Certification and a description of its Waste Minimization Program. (Part I.B.9 Duty to Minimize Waste) EPA considers the following elements among those critical to a successful Waste Minimization Program:

-Written company policy
-Employee training
-An Incentive Program
-Waste Audits
-Material Substitution
-Technology Modification
-Recycling and Reclamation
-Treatment
-Waste Exchange
-Plan Implementation

Permit Attachment E lists documents and sources available to develop a Waste Minimization Program.

4. Interim Measures

This Permit requires the Permittee to implement stabilization activities at the Middle Creek Drainage System, as an interim measure. The goal of stabilization is to control or abate imminent threats to human health and/or the environment from releases at RCRA facilities, and/or to prevent or minimize the further spread of contamination while long-term remedies at the Facility are pursued. The Permittee must submit to the EPA Regional Administrator, a Stabilzation Measures (SM) Workplan for the Middle Creek Drainage System. The SM Workplan shall be in accordance with RCRA, its implementing regulations, and relevant guidance documents.

RCRA Section 3004(o)(1), 42 U.S.C. § 6924(o)(1), specifies minimum technology requirements (MTRs) for replacement or lateral expansion of surface impoundments that contain hazardous wastes. Further, RCRA Section 3005 (j)(6), 42 U.S.C. § 6925(j)(6), provides that surface impoundments that become eligible for interim status after November 8,

1984 as a result of receiving wastes must comply with MTRs of RCRA Section 3004(o)(1)(A) within four (4) years after promulgation.

As a result of the promulgation of Toxicity Characteristic (TC) Rules and Regulations, the Middle Creek Drainage System (SWMU 96) became a regulated Subtitle C surface impoundment unit and as such, is subject to all applicable RCRA regulations.

In observance of the MTR requirement, the Permittee has proposed a closure plan that will achieve complete removal of TC wastes within the four-year MTR timeframe. Since these interim measures activities are similar to the closure activities for the interim status unit, the SM workplan may include all applicable 40 C.F.R. 265.228 requirements.

5. Other Provisions

A number of other HSWA provisions became effective on November 8, 1984. New provisions concerning the standards for owners and operators of hazardous waste management facilities and general permit conditions were promulgated as final regulations on July 15, 1985 (50 Fed. Reg. 28742). In addition to the provision pertaining to corrective action for continuing releases, Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), promulgated at 40 C.F.R. § 270.32(b)(2), authorizes EPA or the State to establish any term or condition in the permit determined necessary to protect human health and the environment.

E. PERMIT ORGANIZATION

The Permit is divided into the Parts outlined below.

Part	Topic
I	Standard Conditions
II	Specific Facility Conditions

Part I contains conditions which apply to all hazardous waste treatment, storage, and disposal facilities. Part II pertains specifically to the SWMUs and AOCs at Sun Oil Refining and Marketing Co.

F. SUMMARY OF THE PERMIT CONDITIONS

This section of the Fact Sheet provides a summary of the conditions in this draft Permit.

PART I STANDARD CONDITIONS

Part I of the Permit sets forth the standard procedural conditions that are applicable to all hazardous waste treatment, storage, and disposal facilities. Unless otherwise specified, all citations refer to the regulations as codified in Title 40 of the Code of Federal Regulations (40 C.F.R.).

Permit Conditions	Subject	Requirement
I.A	Definitions	Part 260.10 Part 270.2
I.B	Standard Duties and Requirements	§ 270.30(f) § 270.41 § 270.42
I.B.1	Duty to Comply	§ 270.30(a)
I.B.2	Duty to Mitigate	§ 270.30(d)
I.B.3	Proper Operation and Maintenance	§ 270.30(e)
I.B.4	Monitoring and Records	§ 270.30(j)
I.B.5	Duty to Provide Information	§ 270.30(h) § 264.74(a)
I.B.6	Inspection and Entry	§ 270.30(i)
I.B.7	Reports, Notifications and Submissions to the Regional Administrator	§ 270.11(b) § 270.30(k)
I.B.8	Documents to be Maintained at Facility Site	§ 264.73
I.B.9	Waste Minimization	§ 264.73(b)(9)
I.B.10	Land Disposal Restrictions	§ 268
I.B.11	Recordkeeping and Reporting	
I.B.11.a	Immediate Reporting of Releases	§ 264.56(d)(1) and (2)

I.B.11.b	Twenty-four Hour Reporting of Noncompliance	§ 270.30(l)(6)
I.B.11.c	Failure to Submit Relevant and/or Accurate Information	§ 270.30(l)(11)
I.B.11.d	Noncompliance with Schedule	§ 270.30(l)(5)
I.B.11.e	Planned Changes and Anticipated Noncompliance	§ 270.30(l)(1) and (2)
I.B.11.f	Other Noncompliance	§ 270.30(l)(10)
I.B.11.g	Biennial Report	§ 270.30(l)(9) § 264.75
I.B.11.h	Manifest Discrepancy	§ 270.30(l)(7)
I.B.11.i	Unmanifested Waste Report	§ 270.30(l)(8) § 264.76
I.B.12	Stabilization	
I.C	Approval/Disapproval of Submission	
I.D	Dispute Resolution	§ 270.41 and § 270.42
I.E	Effect of Permit	§ 270.4 § 270.30(g)
I.F	Permit Modification	§ 270.41 § 270.42 § 270.43
I.G	Permit Expiration and Continuation	§ 270.50
I.H	Transfer of Permits	§ 270.40 § 270.30(l)(3) § 270.42(d)
I.I	Severability	§ 124.16(a)

PART II SPECIFIC FACILITY CONDITIONS

Part II of the Permit sets forth specific conditions with which the Permittee must comply. All provisions required by these parts are authorized by Sections 206, 212, and 224 of HSWA, which amended Section 3004 and 3005 of RCRA, 42 U.S.C. §§ 6924 and 6925, respectively.

Permit Conditions	Subject
II.A.	Corrective Action for Continuing Releases
II.B.	RCRA Facility Investigation
II.C.	Unit Integrity Assessment
II.D.	Verification Investigation
II.E.	Corrective Measures Study
II.F.	Emergency Response; Interim Measures;Release Reporting
II.G.	Guidance Documents
II.H.	Solid Waste Management Unit Assessment
II.I.	Recordkeeping
II.J.	Access for Corrective Action Oversight

FACT SHEET

Attachment A

Solid Waste Management Units

SWMUS AOCS WITH
NO FURTHER ACTION REQUIRED AT THIS TIME

Unit Number	Unit Name	Description/ Wastes Managed	Dates of Operation	Release Controls
1	Tank No. 1 (Receiving Tank)	21,000-gallon, RCRA-regulated waste receiving tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008	1979-present	high level alarms, daily inspections (3 times/day), secondary containment
2	Tank No. 2 (Receiving Tank)	21,000-gallon, RCRA-regulated waste receiving tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008	1979-present	high level alarms, daily inspections (3 times/day), secondary containment

3	Tank No. 3 (Receiving Tank)	21,000-gallon, RCRA-regulated waste receiving tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008	1979-present	high level alarms, daily inspections (3 times/day), secondary containment
6	Tank No. 6 (Collection and Transfer Tank)	2,000-gallon, RCRA-regulated storage and transfer tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008	1979-present	high level alarms, daily inspections (3 times/day), secondary containment
7	Tank No. 51 (Mix Tank)	5,625-gallon, RCRA-regulated mixing tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	high level alarms, daily inspections (3 times/day), secondary containment
8	Tank No. 52 (Contact Tank)	11,610-gallon, RCRA-regulated contact tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	high level alarms, daily inspections (3 times/day), secondary containment

9	Tank No. 53a (Surge Tank)	290-gallon, RCRA-regulated surge tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	high level alarms, indoors, daily inspections (3 times/day), secondary containment
10	Tank No. 53b (Surge Tank)	290-gallon, RCRA-regulated surge tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	high level alarms, indoors, daily inspections (3 times/day), secondary containment
11	Tank No. 53c (Surge Tank)	290-gallon, RCRA-regulated surge tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	high level alarms, indoors, daily inspections (3 times/day), secondary containment
12	Tank No. 56 (Filtrate Tank)	5,625-gallon, RCRA-regulated filtrate tank: filtrate from refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	high level alarms, daily inspections (3 times/day), secondary containment

14	Tank No. 54 (Precoat Tank)	710-gallon mixing tank: wastewater from Middle Creek Surface Drainage System (SWMU 96)	1979-present	carbon steel, pressurized tank, located indoors
16	Tank No. 57 (Equalizing Tank)	2,530-gallon pressurized surge-tank: refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	high level alarms, indoors, daily inspections (3 times/day), secondary containment
17	Catalyst Fines Silo	storage silo/ FCCU catalyst fines: perlite or other precoat materials	1979-present	closed-top, steel, tank on concrete-lined pad
20	Sludge Filter Press	sludge filter press: delisted, dewatered refinery sludges, slurries, K050, K051, K052, F037, D001, D007, D008, catalyst fines	1979-present	located indoors, second floor, above concrete-lined floor
22	Hazardous Waste Container Storage Pad	RCRA-regulated drum storage area: no wastes managed to present	1983-present	concrete-lined pad and sump system, concrete-curbed containment

35-39	10-4 Plant Catalyst Fines Collection Roll-Offs	storage bins: FCCU catalyst fines	1963-present	closed-top steel container on concrete-lined pad
41	10-4 Plant Spent Catalyst Silo	storage silo: FCCU spent catalyst	1963-present	closed-top tank, concrete-lined pad
42	10-4 Plant Electrostatic Precipitators	air emission control units: FCCU spent catalyst fines	1963-present	enclosed unit, concrete-lined pad
44	10-4 Plant Catalyst Regeneration Unit	catalyst regeneration unit: FCCU catalyst	1963-present	enclosed unit, concrete-lined
45	Garage High Pressure Wash Area	indoor parts wash rack/water containing grease and oil	1970-present	indoor unit on concrete-lined floor, collection, sump
46	Garage Aboveground Waste Oil Tank	aboveground storage tank: used crank case oil	1970-present	fully enclosed steel tank, secondary containment with curbing
47	Mechanical Shop Saw Dust Collector	dust collection unit:saw dust	1970-present	fully enclosed metal unit on concrete-lined surface
48	Mechanical Shop Sand Blast Unit	glove box sand blast and collection unit: silica sand	1970-present	fully enclosed indoor unit on concrete-lined floor

49	Mechanical Shop Wire Spray Unit	spray booth: metal fines	1970-present	indoor unit on concrete-lined floor, no venting to atmosphere
52	Laboratory Waste Accumulation Building	container storage building: chlorinated solvents, acids, bases, flammables, reactives	1970s-present	indoor unit, all wastes in steel cabinets above concrete-lined floor
54	B & P Warehouse Drum Loading Area	drum storage pad: hydrocarbon products	1970s-present	concrete-lined unit, above concrete-lined parking area, drainage sumps
58	Slop Oil Tank V-29	storage and transfer tank: slop oil	1980s-present	fully enclosed steel tank, concrete-lined secondary containment

95. **Combined Process/Storm Sewer System**

The Combined Process/Storm Sewer System is an underground piping system located throughout the Facility through which wastewater is transported from all parts of the Refinery to MHR oil/water separators (SWMUs 63 - 68, 70 - 79, 81 - 94) and to the Middle Creek Surface Drainage System (SWMU 96). Process wastewater is piped directly into the system. Storm water is collected in sumps which drain into the system (specially into tank farm areas). Grated sumps located throughout the Facility drain storm water (in non-process areas) and both storm water and other wastewater generated in process operations (in process areas) into the system. The materials of construction of the system vary throughout the Facility, depending on the time of construction. It is likely that corrugated, terra cotta, concrete, and other types of pipe are used in various areas. The various pipes in the system discharge into oil/water separators or directly into the Middle Creek Surface Drainage System (SWMU 96). Some sewer system piping transfers wastewater from oil/water separators into the Middle Creek Surface Drainage

System (SWMU 96) (1A and 12A separators, SWMUs 63 and 83).

The exact dates of construction for the Combined Process/Storm Sewer System can not be identified. It is likely that the earliest portions were constructed when the Refinery was first constructed in the early 1900s. New portions of the system were constructed as the various MHR production units were constructed (to manage wastewater produced by these units) and as new areas of the Refinery were developed (to manage storm water collected in these areas). However, over the past 90 years, many parts of the system have been taken out of service, reconstructed, or have been replaced. Records of such construction have not been consistently maintained over time.

The Combined Process/Storm Sewer System manages process wastewater and storm water generated throughout the MHR. These wastewaters are contaminated or potentially contaminated with hazardous wastes and hazardous constituents.

The MHR oil/water separators (SWMUs 63 - 68, 70 - 79, 81 - 86) control releases of oils and solids from the Combined Process/Sewer System to the Middle Creek Surface Drainage System (SWMU 96). No other release controls for this unit were identified.

Numerous releases through oil/water separators were documented in the files (see SWMUs 35 - 60). Documents revealed a release of ten barrels of slop oil and wax into the Delaware River from a 24-inch sewer line, and several releases of oils into 66 and 24-inch lines.

During the VSI, stained soil surrounding surface drains was noted. The sewer piping system was not observed during the VSI due to its underground location.

EPA is not requiring any further action for this unit at this time. However, if EPA receives additional information that would require further investigation, the Permit will be modified accordingly.

AOC C. **Underground Storage Tank Excavation Areas**

During the VSI, Facility representatives indicated that approximately 75 - 80 underground storage tanks have been excavated and removed from MHR in the past. A large majority of the tanks were removed prior to the inception of EPA's underground storage tank program. No further information concerning the removed underground storage tanks was available during the VSI.

Based on the age of the Facility and the probable age of these tanks, it is likely that many of these tanks have leaked.

EPA is not requiring any further action for this Area of Concern at this time. However, if EPA receives additional information that would require further investigation, the Permit will be modified accordingly.

4. **Tank No. 4 Sludge Storage Tank**
5. **Tank No. 5 Sludge Decant Tank**

These RCRA-regulated units are located outdoors in the southwestern section of MHR adjacent to the lower portion of the Middle Creek Surface Drainage System (SWMU 96). The tanks were constructed between 1976 and 1978 and have been operating since 1979. Tank No. 4 is carbon steel with a capacity of 420,000 gallons and dimensions of 65 feet in diameter by 20 feet in height. Tank No. 5 is carbon steel with a capacity of 168,000 gallons and dimensions of 40 feet in diameter by 20 feet in height. The shell thickness of each tank is 0.25 inches. The tanks are part of the Solid Waste Facility (SWF) and receive sludges and slurries from Tank Nos. 1, 2, and 3 Receiving Tanks (SWMUs 1 - 3). The tanks sometimes receive sludges and slurries from the Tank No.6/Collection and Transfer Tank (SWMU 6). The sludges and slurries are first decanted in Tank 5 and then stored in Tank 4. The sludges and slurries are transferred to Tank No. 51 Mix Tank (SWMU 7), and the decanted water is transferred to the Tank No.6/Collection and Transfer Tank (SWMU 6).

The tanks are located in a containment area (approximately 150 feet by 50 feet) which consists of a gravel base over soil surrounded by a two-foot high compacted earthen dike. The containment area is equipped with a release control valve. When the containment area fills with rainwater, the valve is opened and the contents of the containment area are released into the surrounding soils which drain to the Middle Creek Drainage System (SWMU 96).

The units receive non-hazardous and hazardous (K051) oil/water separator bottom sludges, unleaded and leaded (K052) tank bottoms, heat exchanger bundle cleaning sludge (K050), and acid sludge tank bottoms. The draft Permit for the tanks includes the following RCRA hazardous wastes: K048, K049, K050, K051, K052, D001, D007, D008.

These tanks are located in a gravel-covered containment area with a two-foot high earthen perimeter dike. The containment area reportedly is designed to contain 100 percent of the capacity of the largest tank (i.e., 420,000 gallons). The tanks are equipped with high level alarms and are inspected for malfunctions and releases during each shift (three shifts per day).

According to a December 14, 1988 PADER inspection report, Tank No. 5 was overfilled and the contents (API separator sludge (K051)) was released to the containment area. As of

January 23, 1989, Tank No. 5 was steam and detergent washed to remove spill residue. According to the Facility, stained soil was removed from the containment area and shipped to the Envirosafe landfill in Oregon, Ohio.

As part of the Closure Plan portion of the the Part B Permit Application, the Facility conducted composite soil sampling (0-2 ft. and 2-4 ft, depths) at seven locations within the secondary containment area around Tanks No. 4 and 5. The purpose of the sampling, performed in 1986, was to establish "background data to determine if soils are contaminated at the time of closure". The samples were analyzed for lead, cadmium and chromium (total and EP Toxicity). The data indicated high levels total metals - lead, 38 - 1010 ppm, chromium 53 - 1120 ppm and cadmium in the 0.5 - 9.4 ppm range. The EP Toxicity results indicated cadmium in the 0.005 - 0.012 ppm range and lead in the 0.08 - 0.28 ppm range.

The VSI team observed what appeared to be dried sludge covering a 100 square foot section of the secondary containment area. The team also observed a depression within the containment to be stained with oil. A drain that appeared to be connected to the Middle Creek Drainage System (SWMU 96) was observed next to the oily stained depression. The pipe was observed to be open during the VSI.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

13. **Tank No. 50 Lime Slurry Tank**
15. **Tank No. 55 Hot Water Wash Tank**

These outdoor closed top tanks are located on the southwestern section of MHR. They are part of the SWF which consists of a number of tanks and buildings built into one foundation. Both units are located on the Filter Press Building's northeast side. The tanks were constructed between 1976 - 1978 and operations were begun in 1979. Both tanks are currently in operation.

Tank No. 50 is made of poured reinforced concrete with a capacity of 1,615 gallons and dimensions of 8 ft. by 8 ft. by 8 ft., with a shell thickness of 12 inches. Tank No. 55 is also of poured reinforced concrete with a 5,385 gallon capacity and dimensions of 8 ft. by 8 ft. by 11.25 ft., with a shell thickness of 12 inches. The bottom portions of the tanks are partially below-grade and part of the SWF foundation. They could not be observed during the VSI.

In Tank No.55/Lime Slurry Tank, lime from the lime storage bin is mixed in a continuous process with process wastewater

to form a lime slurry prior to being discharged to Tank 51 (SWMU 7) for treatment.

In Tank No.50/Hot Wash Tank, water from the Middle Creek Surface Drainage System (SWMU 96) is heated prior to being discharged to the Sludge Filter Press (SWMU 20).

Both units manage wastewater containing oil and hydrocarbons. According to Facility representatives, the process wastewater in Tank No. 50 may contain up to 30 percent oil. However, the Facility has reported that the concentration of oil and grease in the wastewater is normally less than 100 ppm. The wastewater in Tank No. 55 is from the Middle Creek Surface Drainage System (SWMU 96) and contains hydrocarbons.

These tanks are surrounded by other concrete structures within the SWF and are equipped with high-level alarms. According to facility representatives, both tanks were sprayed with a gunnite protective coating at the time of construction, though the bases of the tanks have no additional protection.

No evidence of release(s) was identified through review of the available file materials. During the VSI, the visible portions of the tanks appeared to be intact and uncracked. However, a large portion of the tanks could not be observed, including the base, because of the unit construction into the SWF.

EPA is requiring that the integrity of these tanks be verified.

18. **Lime, Spent Clay, and Catalyst Loading System**

This inactive unit is located outdoors on the north side of the SWF in the southwest section of the facility. The unit operated from 1979 to 1983. The unit is situated in an area approximately 25 feet by 10 feet between the Catalyst Fines Silo (SWMU 17) and the Lime Silo. The unit is constructed of steel beams, hoppers, bunkers, and conveyors and was designed as a tilt-frame unloading system similar to those systems used for roll-off containers. The base of the unit is partially below-grade having been constructed inside a concrete containment area that is approximately three feet deep. The above-grade portion of the unit is situated next to an area that is partially gravel and partially paved.

The unit was used to unload containers that transported spent clay from the Clay Contact Plant Area (SWMU 57) and Spent Catalyst Fines generated at the 10-4 Plant Roll-Off Storage Area (SWMU 40) to the SWF. The unit is also

equipped with a pneumatic truck-unloading system for product lime. The waste materials were emptied into bunkers. Conveyors were used to transfer the materials into the No.

51 Mix Tank (SWMU 7) (clay), the Catalyst Fines Silo (SWMU 17) (catalyst fines), or the Lime Silo (lime).

The waste managed by the unit included spent clay and catalyst. The unit received spent clay from the Contact Plant, which contained acids, caustics, sulfonates, water, and aromatics from specialty oils. The clays had a hydrocarbon content of approximately 30 percent. The catalyst fines consist largely of aluminum silica, and was thought to contain some trace heavy metals.

Although the bottom portion of the unit sits inside a below-grade concrete containment area approximately three feet deep, there are no release controls for the above-grade portions of the unit, where the primary waste management activities would have taken place.

No evidence of release(s) was identified through review of the available file materials. During the VSI, the unit was observed to be rusted, though no specific staining of the gravel was noted.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

19. **Sludge Receiving Trough**

This unit is located outside the southeast corner of the SWF in the southwest section of the Facility. The Sludge Receiving Area was constructed in 1976 - 1978, began operating in 1979, and is currently in operation. The trough is concrete with dimensions of 40 ft. long by 25 ft. wide, in area with a depth of about 5 ft. on three sides and about 3 ft. deep on the fourth side. The trough itself is situated about 3 ft. down into a larger concrete slab which extends away from the trough to form a truck ramp. The trough is located at the top of this slab with the walls of the trough extending 5 feet above the structure on three sides and about six inches on the front side (or unloading end). The truck ramp is a concrete slab approximately 130 feet in length by 50 feet wide by 6 feet thick and slopes to the gravel surface at the western side of the SWF which serves as a parking area. The area to the east of the Sludge Receiving Trough and the SWF is gravel covered and is within the containment area for Tank Nos. 4 and 5/Sludge Storage and Decant Tanks(SWMUs 4 and 5).

The trough is the first unit in the SWF treatment chain.

Trucks containing untreated sludges and slurries back up the truck ramp and then dump their loads into the front of the trough. Available file information indicats that the capacity of the trough was 5,000 gallons. This capacity, however, would require that all four sides of the unit be the same height. The front wall of the unit has been reduced to a height of approximately six inches above grade vs. about 2.5 feet above grade (for the other walls). A roll-off container (discussed below) is also located on the eastern end of the slab.

Sludges and slurries from various generation points within MHR (e.g., oil/water separators, the Heat Exchanger Bundle Cleaning Area (SWMU 62) and product tank cleaning operations) are dumped from trucks into the trough. The trough contains a bar screen and comminutor for removing debris and lumps from the treatment plant feed. The debris that is removed is placed in a small wagon and transported to the 8 cubic yard roll-off container for storage. The slurry and sludge wastes from the trough are discharged into the Receiving Tanks 1 - 3 (SWMUs 1 - 3). Wastes can also be pumped directly from trucks using hoses through an opening in the upper-southern wall of Tank No. 1 Receiving Tank (SWMU 1). There is a drain at this unit which flows directly to the Middle Creek Surface Drainage System (SWMU 96)

The Sludge Receiving Area manages refinery sludges and slurries including non-hazardous and hazardous (K051) oil/water separator bottom sludges, unleaded and leaded (K052) tank bottoms, heat exchanger bundle cleaning sludge (K050), and acid sludge tank bottoms. The Draft Permit for the SWF tanks, which manage the same wastes as the Sludge Receiving Area, includes the following RCRA hazardous wastes: K048, K049, K050, K051, K052, D001, D007, D008 (References 10, 14, 15).

An approximately four-foot steel extension has been added to the back wall of the Sludge Receiving Trough (eastern end) to limit splashing of wastes as they are dumped into the trough. Run-off from the top portion of the truck ramp is routed to a grated drain which discharges through a pipe to the neutralization basin portion of the Middle Creek Surface Drainage System (SWMU 96). Run-off from the lower portion of the truck ramp flows down the ramp and onto the paved parking area on the west side of the SWF or the gravel area on the south side of the SWF.

No information on releases was identified in the available file information. However, during the VSI, heavy dark oily staining was noted on and over the walls of the trough, over the entire truck ramp, and on the back of the eastern side

of the concrete Sludge Receiving Trough slab underlying the unit. The staining on the truck ramp appeared to follow run-off pathways down the truck ramp to the gravel parking area on the west side of the SWF.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

21. **Filter Cake Knock-Out Area**

The Filter Cake Knock-Out Area is located in a concrete room on the ground-level of the Filter Press Building in the southwestern section of MHR at the SWF. The Filter Cake Knock-Out Area was constructed in 1976 - 1978 and was first used in 1979. The unit is currently in operation. The unit is a concrete area approximately 8 ft. by 15 ft. with a 30-yard steel roll-off container. The floor of the area is equipped with roll tracks for the container and is open on the west side so that the roll-off container can be moved in and out of the area. There are garage-type overhead doors on the opening of the room leading to the parking lot.

Filter cake from the SWF treatment process Sludge Filter Press (SWMU 20) is dropped into the roll-off container through a chute connected to the Sludge Filter Press (SWMU 20) located above the unit on the second floor of the Filter Press Building. Plastic splash guards have been added to the chute to minimize overflow from the container during loading.

During the VSI, it was observed that the concrete flooring under the container was stained and the area between the roll tracks looked to be damaged. Track out to the gravel parking area was also observed during the VSI.

The waste managed in this unit is hazardous waste filter cake from the dewatering and treatment of refinery sludges and slurries at the SWF. The average solids content of the cake is 65 - 70%, and the average oil content is 2 - 4%. It is estimated that 2 - 3 roll-off containers of waste are generated per day during the 4 - 6 months of the year that the SWF is in operation.

Release controls for this unit include splash guards, which were recently added to reduce spillage, partial enclosure within a concrete room, and doors on the opening of the room. However, there are no release controls to prevent track-out.

During the VSI, evidence of splashing and overflow of filter cake from the container was noted, including stains on the

walls of the containment room and dirt-like debris in the track area of the floor.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

EPA is also requiring that the integrity of this unit be determined.

23. **Old Sludge Basin**
24. **Old Decant Basin**

These former units are situated beneath and to the west of the Hazardous Waste Container Storage Pad (SWMU 22) in the southwestern section of the Facility. The units operated between the 1950s and the late 1970s. The former units were unlined surface impoundments used for the disposal of API separator sludges and leaded tank bottoms. The two basins are next to each other with the Old Sludge Basin on the west side and the Old Decant Basin on the east. The combined dimensions of the units are reported as being 280 feet by 220 feet, covering approximately 1.4 acres.

Sometime in the late 1970s, the Facility stopped using the units. The wastes were reportedly stabilized with fly ash and the area was regraded. The two basins were consolidated into one basin during these activities. During the VSI the exact boundaries of the units could not be identified, but it was noted that the top of the identifiable part of the units is two to four feet above grade. Other aspects of the units could not be evaluated during the VSI due to their below-ground location and covered condition.

The impoundments reportedly received API separator sludges and leaded tank bottoms. According to the Facility's 1980 Notification of Hazardous Waste Site(s), the two units together contain up to 490,000 cubic feet of waste treated with fly ash.

There were no release controls associated with these units during their active life. The waste was reportedly stabilized with fly ash. During the VSI it appeared that the units were covered with soil.

No evidence of release was identified in the available file information. During the VSI, no evidence of release was noted on the visible portions of the units. However the units managed hazardous waste in contact with bare soil during their operating lifetimes.

EPA is requiring the Facility to conduct an RCRA Facility Investigation (RFI) to determine if soil, surface water, and

ground water contamination is present.

25. **Old 12 Plant Sludge Basin**

This inactive unit is located between Hewes Avenue and Green Street in the vicinity of the Crude Unit in the northeast section of the Facility. A small rail yard is situated between the unit and the Crude Unit. The unit was operated from the 1920s until the 1940s. The unit is adjacent to Walkers Run on the northern portion of the Middle Creek Surface Drainage System (SWMU 96). The unlined basin was used for the disposal of acid sludge generated by lube oil manufacturing operations. The basin was partially covered with soil and gravel at some point after the 1940s and the exact boundaries and dimensions of the basin are not known. A review of available core boring logs, recorded during 1956, indicate the basin covered approximately 9.3 acres. During the VSI, the southern portion of the unit, which was observed to be covered with soil and gravel, was being used for the storage of railroad ties and equipment.

During the VSI, pockets of acid sludge resembling asphalt were observed to be seeping through the ground surface at several points. The northern portion of the unit, which is uncovered, was observed to contain asphalt-like sludges and pools of dark, oily liquid.

The unit received acid sludges from petroleum refining operations. Analysis of core boring logs, recorded during 1956, indicated that the unit contains approximately 3.2 million cubic feet of acid sludge mixed with fill material consisting of cinders and unspecified debris. A portion of the unit is currently being used to store railroad ties and equipment, though the Facility claims that these are not wastes.

There are no known release controls for this unlined unit other than partial coverage of the southern portion with soil and gravel.

There are no releases identified in the available material. However, this is an unlined unit and during the VSI seepage was noted in several areas along the covered portion of the unit and the uncovered portion was observed to contain sludges and pools of oily liquids.

EPA is requiring the Facility to conduct an RCRA Facility Investigation (RFI) to determine if soil, sediment, surface water, and ground water contamination is present.

26. **Old 18 Plant Sludge Basin**

The unit is located in the vicinity of the 18 Plant in the eastern section of MHR. The unit operated prior to the 1950s. A cooling tower and at least portions of several product storage tanks, have been constructed on top of the unit. The unit consists of an unlined basin that reportedly received acid sludge. The unit is approximately three acres in area, though there is no information on the exact boundaries or dimensions of the basin. The area of the unit which did not have process units on it, was observed to be covered with gravel at the time of the VSI. According to the Notification of Hazardous Waste Site form submitted to EPA by the Facility, an unspecified portion of the waste was removed from the unit at some time in the past.

The unit received acid refinery sludges. According to the core boring logs recorded during 1951, the unit may have received up to 760 million cubic feet of acid sludge and fill material. The fill material was described as similar to the fill disposed of in the Old 12 Plant Sludge Basin (SWMU 25).

The unit has been covered with soil and gravel. There are no other known release controls for this unlined unit.

There were no releases identified in the available file information, however, the unit is unlined. During the VSI, the unit was observed to be covered with soil and gravel. Some surface staining was noted, but no sludges or seeps were observed.

EPA is requiring the Facility to conduct an RCRA Facility Investigation (RFI) to determine if soil, surface water, and ground water contamination is present.

27. **Phillips Island Area**

This unit (SWMU 27) is a fill area located northwest of Dock 3 in the southern section of the facility. The unit received waste from the 1950s to the late 1970s, and ash in approximately 1985 - 1986. The unit received fill materials reportedly for real estate development purposes between the 1950s and late 1970s. Some of the fill reportedly contained hazardous wastes or constituents. The Phillips Island area is also the location of the Phillips Island Maintenance Storage Area (SWMU 28), the Phillips Island Roll-Off Storage Area (SWMU 29), the Phillips Island Old Drum Storage/Small Roll-Off Area (SWMU 30), the Fire Fighter Training Area (SWMU 31), Impoundment Tank T-101 (SWMU 32), the Phillips Island Surface Drainage Ditches (SWMU 33), and the Phillips Island Sand Blasting Area (SWMU 34).

This unlined landfill is approximately 27 acres in aerial

extent and is bounded by the Delaware River on the south. The exact dimensions, including depth of fill, are not known and the locations of the western, northern and southern boundaries are not known.

One five-acre area of the Phillips Island Area was filled and regraded in the 1980s using a 50%/50% mixture of soil and incinerator ash from the DELCORA wastewater treatment facility. A November 13, 1985 letter from PADER (Reference 100) granted approval for receipt of 9,000 tons of incinerator ash to be used as fill to provide stabilization for the area. Another document indicates that as much as 18,000 tons of the material was disposed of in the area. Facility representatives reported that the ash was used in the southern portion of Phillips Island, adjacent to the Delaware River.

During the VSI, the area was observed to be partially vegetated, with the remainder of the area covered with soil. At the time of the VSI, the southeast portion of the unit was being used to store gravel material removed from above-ground containment areas throughout the Facility.

From the 1950s to the late 1970s, the unit received construction debris, granite rubble, foundry slag, incinerator ash that may have been EP toxic, soil, spent Fuller's earth, alumina-silica catalyst fines, and domestic refuse. The unit also received an estimated 4556 cubic yards of API separator bottoms mixed with fly ash.

During the 1980s, ash described as ash from incineration of wastewater treatment sludge generated at the DELCORA facility in Chester, PA was used to fill and regrade the surface of a portion of the Phillips Island Area. The ash is described as solid (equal to or greater than 20% solid by dry weight and non-flowable), having a pH between 5.8 and 7.7, and non-hazardous (does not fail the EP toxicity characteristic). According to information provided by Facility personnel, the unit may have also been the location of unlined crude oil impoundments during the early history of the Facility.

The unit is covered with soil and partially vegetated. There are no other known release controls for this unlined unit.There were no releases identified in the available file information, however, the unit is unlined. During the VSI, the unit was observed to be partially vegetated, with the remainder of the area being covered with soil. The soils covering the remainder of the unit were dark and appeared to be stained in various areas, though this seemed to be attributable to activities taking place on the surface of the unit (e.g., storage of gravel from containment areas).

No evidence of seepage was noted.

EPA is requiring the facility to conduct an RCRA Facility Investigation (RFI) to determine if soil, surface water, and ground water contamination is present.

28. **Phillips Island Maintenance Storage Area**

The Phillips Island Maintenance Storage Area is located on the surface of the Phillips Island Area (SWMU 27) in the southwestern portion of MHR. The area is located to the west of the southern terminus of Blueball Avenue. The unit has been in operation since approximately 1980 and is currently in use. The storage area is used by the MHR Maintenance Department for storage of scrap metal, equipment pieces and parts, construction materials, and other items. According to Facility representatives, these items may or may not be reused in the future. The area is approximately 50-yards square and has soil and gravel berms approximately 15-feet high on the north, west, and south. The northern berm is free-standing and the southern and western berms are formed by an increase in the surface grade on these sides. The eastern side of the unit is controlled with a five-foot dust fence. The floor of the unit is bare soil (Phillips Island fill) and gravel. Run-off from the unit would flow to the Combined Process/Storm Sewer System (SWMU 95) through drains along Blueball Avenue.

During the VSI, the unit was observed to be storing a variety of wastes in several piles around the area. Wastes identified included used piping and scrap metal, wood boxes and pallets, and various construction debris. Several discolored patches of soil were also noted.

The wastes managed in the unit include scrap metal, used equipment (primarily valves and pipes), and construction materials. The used equipment is likely to be contaminated with residual oil and petroleum wastes, as there is no evidence that these materials are drained or in any way cleaned prior to placement in this area.

The unit has soil and gravel berms on three sides. However, the unit is unlined and there are no other release controls.

There were no releases identified in the available file information, however, wastes (potentially contaminated with petroleum products) are stored directly on the ground. During the VSI, discolored soils were noted in several areas of the unit.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

29. **Phillips Island Roll-Off Storage Area**

The Phillips Island Roll-off Storage Area is situated on the surface of the Phillips Island Area (SWMU 27) in the south western portion of MHR. The area is located to the west of the intersection of Blueball Avenue and Second Street. The unit has been in operation since approximately 1970 and is currently in use. The unit consists of an unpaved area, partially covered with gravel, in which approximately 35 20-yard roll-off dumpsters are staged and stored. The area is approximately 75 yards long (north - south) and 35 yards wide (west - east). According to Facility representatives, the majority of the dumpsters presently stored in the area are usually empty. One dumpster in the area is used to store asbestos that has been removed from various locations prior to shipment off-site. At the time of the VSI, approximately five dumpsters contained spent 10-4 Plant FCCU catalyst. The area around these dumpsters appeared to have had catalyst spilled onto it. A drainage ditch runs along the east side of the area (parallel to Blueball Avenue). This drainage ditch and run-off from the unit flow to the Combined Process/Storm Sewer System (SWMU 95) through drains along Blueball Avenue.

Wastes managed in dumpsters in this area include bagged asbestos, general refuse, and spent catalyst from the 10-4 Plant FCCU. The composition of the catalyst is approximately 70% silica and 30% alumina. The spent catalyst also contains 2-3 ppm nickel as a contaminant. Occasionally, dumpsters containing filter cake from the SWF may be staged temporarily in the area prior to shipment off-site for disposal. Facility representatives indicated that approximately 400 tons (25 roll-off boxes) of spent catalyst had been transferred into the area recently due to a maintenance shut-down of the 10-4 Plant.

The unit has no release controls and the area is unpaved.

No information on releases from this unit was identified in the available file material. During the VSI, quantities of a fine, grey particulate material were observed to be on the ground in the area, particularly near the ramp where spent catalyst from trucks is dumped into the roll-off boxes. The soils in the area were dark with staining noted in several places.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

30. **Phillips Island Old Drum Storage/Small Roll-Off Area**

The Phillips Island Old Drum Storage/Small Roll-off Area is situated on the surface of the Phillips Island Area (SWMU 27) in the south western portion of MHR. The area is located to the northwest of Impoundment Tank T-101 (SWMU 32) on the southeastern corner of the intersection of Ethylene Boulevard and the SunOlin Access Road. Facility representatives estimated that this unit has been in operation for 10 to 20 years. The unit consists of an unpaved area that is partially covered with gravel. The area is approximately 200 feet (north-south) by 100 feet (west-east) and is currently used for the temporary storage of wastes in roll-off containers while analysis is conducted or appropriate disposal arrangements are made. At the time of the VSI, approximately 35, six (6) and eight (8) yard roll-off containers were stored and staged in the area.

During the VSI, the roll-off containers were observed to be extensively rusted and the soils were dark with staining noted in several areas of the soils and gravel.

The wastes presently stored in roll-off containers in the area include asphaltic sludges, general refuse, and hydrocarbon contaminated soils from spill cleanups. Based on the Facility's designation of the area as the "old drum storage area", it is likely that this area was used to store drummed waste. However, Facility representatives were not able to identify the type or quantity of waste.

There are no release controls for the unit.

During the VSI several stained areas were noted in the area, particularly near the roll-off containers. No evidence of release was identified in the available file materials.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

31. **Fire Fighter Training Area**

This unit is situated on the surface of the Phillips Island Area (SWMU 27) in the southern section of the Facility. The unit includes the area which is currently used for fire-fighting training and areas reported to be to the south of the current area, that were previously used for fire-fighting training.

The portion of the unit that is currently used for these training activities is located in a fenced area immediately to the west of the Phillips Island Roll-Off Storage Area (SWMU 29). This area consists of a gravel-covered area approximately 50-yards square which includes a 20- by 60-foot concrete pad with a six-inch curb and two 15-foot

diameter half tanks, about 15 feet high. The area is fenced and also includes several product storage tanks and a diked area which is an emergency ground flare for the Refinery.

For the current fire training exercises on the pad, No. 2 fuel oil is piped into metal structures situated on the pad. The structure is lighted and then extinguished by trainees. In the half-tanks, gasoline and No. 2 fuel oil are floated on water, burned, and put out by trainees. Residual liquids from the fire fighting operations (pad and tanks) are drained into an unlined 3-foot deep rip rap-filled french drain system located along the northern perimeter of and to the west of the concrete pad. The french drain reportedly flows into the Middle Creek Surface Drainage System (SWMU 96). The exact route of flow was not known.

Before the pad was installed, the training activities were conducted over bare soil and gravel. There were no controls to prevent spillage of fuel oil as it was applied to the structure. The exact location and dimensions of the former training operations are not known. According to Facility representatives, these previous operations were conducted on soil or gravel rather than concrete. Based on typical fire fighting activities, it is likely that these activities involved placement of combustibles containing fuel oil directly on the soil, burning, extinguishing and leaving the residuals in place.

The Facility first requested permission to conduct fire fighting training in 1972. PADER approved the activities on August 18, 1972. The exact dates of operation for the former areas are not available. The concrete pad in the current fire training location was constructed approximately two years ago. Current training is conducted 2-3 times per week.

Gasoline, propane, and No. 2 fuel oil are used to generate the fires. Various types of extinguishers are used, however, the most frequently used is the dry chemical, Purple K.

Release controls for the current area include a concrete pad and State restrictions on the number and length of burning episodes and a prohibition on fire training during periods of air stagnation.

Excessive smoke was noted from MHR fire fighting exercises by a PADER inspector on April 13, 1989. During the VSI, dark oily stains were noted on the concrete pad and on the gravel pack in the unlined french drain. Staining was noted along the drain lines from both half-tanks to the central drain line (adjacent to the pad) and from the pad to the

perimeter of the fenced area to the west (near a roadway).

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

32. **Impoundment Tank T-101**

The unit is located at Phillips Island in the vicinity of the SWF in the south section of the Facility. The unit has been in operation since approximately 1974. The open-topped tank is approximately 25 feet above grade, 300 feet in diameter, and has a capacity of 13.5 million gallons. The tank is constructed of concrete and the walls are approximately one-foot thick. Facility representatives estimated that the tank volume has approximately 10 feet of additional below-grade depth.

The tank is used as an equalization and storage basin for process wastewater and for storm water from the Middle Creek Surface Drainage System (SWMU 96). During storm events, the tank is used to minimize overflow of the Middle Creek Surface Drainage System (SWMU 96) and to regulate flow to the DELCORA POTW. Water from the Middle Creek Surface Drainage System (SWMU 96) is pumped into the unit when the level of the creek reaches 7.75 feet. Floating oil skimmers are designed to remove free oil from the surface of the water which is discharged to the Facility's slop oil refinery system. The water is returned to the Middle Creek Surface Drainage System (SWMU 96) by gravity flow when the storage capacity is no longer needed. At the time of the VSI, the oil skimmers appeared not to be operational and the surface of the water in the tank was covered with a thick, oily substance.

The unit receives process wastewater and storm water containing free oil from the Middle Creek Surface Drainage System (SWMU 96).

The unit reportedly has level gauges. No additional release controls other than gravity flow lines for emptying the unit were identified.

No evidence of release was identified in the available file materials. During the VSI, hydrocarbon odors were noticed in the vicinity of the unit.

EPA is requiring that the integrity of this tank be determined.

33. **Phillips Island Surface Drainage Ditches**

The Phillips Island Surface Drainage Ditches are located in the northern portion of the Phillips Island Area (SWMU 27) and to the west and north of Impoundment Tank T-101 (SWMU 32). The date of construction of the Phillips Island Surface Drainage Ditches was not known. The unit is currently in operation. The ditches are unlined, and range from approximately 4 to 10 feet wide and not more than two feet deep. The ditches handle run-off from the general area. The ditches flow west into drains along Blueball Avenue, which lead to an underground sewer line (Combined Process/Storm Sewer System (SWMU 95)) which discharges into the Middle Creek Surface Drainage System (SWMU 96).

The unit manages run-off from the Phillips Island Area (SWMU 27) which contains petroleum sludges.

There are no release controls for this unit.

No evidence of release(s) was identified in the available file material, however, the unit is unlined. During the VSI, the ditches were partially filled with run-off water. The sides of the ditches were observed to be discolored.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

34. **Phillips Island Sand Blasting Area**

The Phillips Island Sand Blasting Area is situated on the surface of the Phillips Island Area (SWMU 27) in the southern section of the Facility. The unit is located to the south of the Firefighter Training Area (SWMU 31). The Phillips Island Sand Blasting Area has probably been in operation for the last ten or twenty years. The surfaces of new piping and other metal parts and equipment are cleaned in the area by blasting with silica sand. A tank and compressor system are used to propel the blasting agent. The area used for blasting is unpaved and is approximately 50 yards square in area. The used blasting agent is left on the soil in the area. The sand blast residues are reportedly removed annually, though the final disposition of these wastes is not clear.

Although the Facility stated that only new parts were sand-blasted in this area, various pieces of rusted piping and scrap metal parts were observed at the unit during the VSI.

The unit manages used silica sand blast residue contaminated with metals.

There are no release controls at this unit.

No evidence of release(s) was identified in the available file information. During the VSI it was observed that accumulated used sand blast medium covers the soil in the area. In some areas the sand blast residue appears to be piled up to a thickness of at least a foot. The soil at the perimeter of the sand residues was discolored.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

40. **10-4 Plant Roll-Off Storage Area**

The unit is located in the vicinity of the FCCU in the northeast section of the Facility. The unit has been in operation since 1945. The unit is used to stage the 10-4 Plant Catalyst Fines Collection Roll-Offs (SWMUs 35-39) prior to transport to the SWF where the fines are used as a precoat (Tank No. 54 Precoat Tank - SWMU 14) for the Sludge Filter Press (SWMU 20). Roll-offs containing spent FCCU catalyst from the 10-4 Plant Spent Catalyst Silo (SWMU 41) are also staged in the area prior to transport to the Phillips Island Roll-Off Storage Area (SWMU 29) and/or subsequent transport off-site for disposal. The unit is an unpaved, outdoor area approximately 200 feet (north - south) by 50 feet (west - east). At the time of the VSI, approximately 20 30-cubic yard roll-off containers were located in the area.

FCCU catalyst fines and spent aluminum-silica catalysts are stored in roll-off containers in this unit. The catalyst may contain 2 - 3 ppm nickel as a contaminant.

The wastes are stored in covered, steel roll-off containers. There are no release controls during waste transfer operations.

The unit is unpaved. During the VSI, gray residues were noted on the ground surface within the area. No evidence of release was identified in the available file material.

EPA is requiring a VI to determine if there have been any releases to the soil.

43. **10-4 Plant Sour Water Stripper**

The unit is located at the FCCU in the north section of the Facility. The unit has been operating since 1964. The unit is a steel packed tower stripper used to control sulfur emissions from the steam and flue gases emitted from the FCCU. The unit is situated on a concrete surface in the FCCU process area and has a throughput of 200 gallons per minute. The resulting sour water containing H_2S is piped to

the gas plant located to the west of the Facility, where the sulfur is recovered.

During the VSI, the base of the unit appeared to be impaired and the concrete area was observed to be stained.

The sour water contains sulfides, mercaptains, and phenols.

The process area is drained through the Combined Process/Storm Sewer System (SWMU 95) to the 10 Oil/Water Separators (SWMUs 81, 82) and then to the Middle Creek Surface Drainage System (SWMU 96).

No evidence of release(s) was identified in the available file material. During the VSI, the base and concrete pad at the unit was stained, though no releases to surrounding soils were noted.

EPA is requiring that the integrity of this unit be determined.

50. **Mechanical Shop Equipment Wash Rack**

The outdoor unit is located adjacent to and south of the Mechanical Shop Building in the central section of the Facility. The unit has been in operation since the Mechanical Shop was constructed in the 1970s. The unit is a grated sump over which high pressure water and a cleaning solution are used to clean metal parts, machinery, and equipment. The unit drains through a drain in the sump and the Combined Process/Storm Sewer System (SWMU 95) to the 1F Oil/Water Separator (SWMU 68) and then to the Middle Creek Surface Drainage System (SWMU 96). The unit consists of a grated, in-ground, concrete sump approximately 15 by 12 feet in area and six inches deep. Above the grate, the unit is enclosed by brick or concrete block walls approximately six-feet high on three sides. The fourth side (south), is open to a paved parking area. A high pressure water connection and hose are located over the grate.

The washwater from this unit contains residual oil and sludges.

The walls and surrounding concrete area provide control for the overspray.

During the VSI, evidence of staining was noted on the asphalt parking area adjacent to the unit. However, no evidence of release(s) to soils was noted. The bottom of the sump could not be inspected during the VSI. No evidence of release(s) was identified through review of the available file materials.

EPA is requiring that the integrity of this unit be determined.

51. **Dock No. 2 Recovery Well System**

The unit is located at Dock No. 2, which runs along the Delaware River in the south section of the Facility. The recovery system was installed in 1987 and is currently in operation. The Dock No. 2 Recovery Well System includes a horizontal, above-ground 5,000 gallon steel tank and associated hosing which is connected to a recovery well. The system was first installed in response to reappearing sheens on the nearby Delaware River for which there was no immediate explanation. The system has recovered increasing quantities of a substance the MHR lab believes to be kerosene. Total recovery as of the end of 1988 was 31,000 gallons. A pump installed in the well automatically pumps the hydrocarbon layer (which floats on the groundwater) to the tank. The kerosene is periodically removed from the tank for disposal off-site. During the VSI, the tank appeared to be in good condition, although some staining was noted.

A hydrocarbon substance believed to be kerosene is managed here.

The tank is constructed of steel and is closed. No other release controls are associated with this unit.

No information on releases was identified in the available file material. During the VSI, evidence of staining was noted in the area between the tank and the well and beneath the tank at the hose connections.

EPA is requiring a VI to determine if there have been any releases to the soil.

53. **8-C Crude Unit Drip Showers**

This outdoor unit is located at the 8-C Crude Unit in the east section of the facility. The unit consists of four grated sumps. The unit was constructed in or about 1950, and is currently in operation. Originally, this unit was used to cool drums of carbon disulfide (which was used in the past to pretreat the 8-C Unit catalyst) by spraying them with water. The unit is currently used to clean residual oil and sludges from used parts, machinery, and equipment. The unit is approximately 30 feet square and is separated into four quarters. Above the grates, each sump is enclosed on three sides by concrete block walls which are approximately eight feet high. The front of the unit is equipped with a six inch concrete berm and opens onto a

concrete surface which surrounds the unit. High pressure water connections and hoses are located over the grates. The sumps are not drained and are reportedly pumped out when full. The concrete process area surrounding the unit is drained to the Combined Process/Storm Sewer System (SWMU 95), which flows to the 16 Oil/Water Separators (SWMUs 84 - 86) and then to the Middle Creek Surface Drainage System (SWMU 96).

Previously, water contaminated with carbon disulfide was managed in the unit. Currently, washwater containing residual oil and sludges is managed.

Three walls and surrounding concrete floor provide control for the overspray.

Dark staining, indicating that several of the sumps have experienced some overflow, was noted on the outer concrete berms of the sumps. An overflow weir knocked out of one sump berm also exhibited some staining indicating that flow out of the sump had occurred. However, all staining was observed to be confined to the concrete area. The bottoms of the sumps could not be inspected during the VSI; several of the sumps contained standing liquids. No evidence of release was identified through review of the available file materials.

EPA is requiring that the integrity of this unit be determined.

55. **Benzene Vapor Recovery System**

The unit is located at the 15-Plant Propylene Units in the central section of the Facility. The date of start-up of this unit is not known; however, it was likely constructed in 1965, at the same time as the BTX Production Plants (15 and 17). The system was taken out of operation within the last ten years. The unit consists of a benzene recovery system that was used when benzene was loaded into tanker trucks. There is no toluene recovery system due to its lower volatility. The benzene recovery system consisted of outer boots that surrounded the loading arms and joined the side of the tanker, thus enclosing the loading attachment. The vapors collected in the boot were pumped to a liquid extraction column in which the benzene was extracted into a gas oil. The gas oil was then returned to the benzene production process. The recovery unit consists of the above ground extraction column, piping and equipment, and an in-ground, grated concrete sump that is located near the base of the column. The sump is approximately four feet square in area and the depth could not be determined because the unit contained liquid at the time of the VSI.

The inside of the in-ground concrete sump could not be inspected during the VSI. A strong odor was noted in the area of the unit during the VSI.

EPA is requiring that the integrity of this unit be determined.

56. **Asphalt Plant Area**

The unit is located in the central section of the Facility on the northern bank of the Middle Creek Surface Drainage System (SWMU 96) at the intersection of Hewes Avenue and Middle Creek Road. The asphalt plant was constructed in the 1920s or 1930s. The plant was taken out of operation in the early 1970s. Some preliminary demolition was conducted in the area in the mid-1980s. The unit is an abandoned asphalt production plant that produced asphalt from the heavier fractions of crude oil. Although the plant was taken out of service in the early 1970s, much of the plant structures, including process tanks and storage areas, remain in-place. Portions of the plant were demolished in the mid-1980s, however, heavy asphalt residue remains throughout most of the plant and wastes have been left in-place.

The plant covers an area approximately 200 feet (east - west) by 100 feet (north - south) and originally included eight large steel storage tanks in two east - west rows situated on circular concrete pads. The production system was located between the two rows of tanks. The production area was paved with concrete and had a grated, in-ground sump running down the middle of the area (east - west). The grated sump terminates at the western end of the plant by flowing into a square concrete in-ground sump. An overflow weir in the sump appeared to allow settling of solids before the sump discharged to a below-ground pipe, presumably part of the Combined Process/Storm Sewer System (SWMU 95). Parts of the production area were paved with concrete and encircled by a concrete wall approximately three feet high. A drain and sump system was used to collect liquids from the process area and separate out solids prior to discharge to the Combined Process/Storm Sewer System (SWMU 95) which flowed to the 1D Oil/Water Separator (SWMU 66) and then to the Middle Creek Surface Drainage System (SWMU 96).

At the time of the VSI, it was noted that some demolition activities have taken place. The four tanks in the southern row are still standing, although large entries have been cut into the steel walls. The four tanks in the northern row have been removed and only the concrete pads remain. Remaining process equipment includes piping, pumps, and

other apparatus. At the time of the VSI, the sump was observed to be full of dark, oily standing liquids and appeared to be in disrepair. The settling portion of the sump was full of residues at the time of the VSI. At the eastern edge of the process area an additional sump was noted, but the purpose and operation of the sump was not clear. During the VSI, the process area was heavily stained and oily residues were noted on the remaining structures and equipment.

According to the Facility, liquid wastes from the Asphalt Plant Area were reprocessed through the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58-60)). Emulsions were reportedly sent to a commercial TSD facility and solids were sent to an off-site commercial landfill.

Wastes managed at this unit include process residues, wastewater, tank cleaning residues, and separation residues. Asphalts contain high molecular weight hydrocarbons called asphaltenes (soluble carbon disulfide) and aromatic hydrocarbons (referred to as volatile oils).

Release controls included pavement on portions of the production area and use of drains and sumps to collect process wastewaters prior to discharge to the sewer system.

During the VSI, heavy staining, oily residues, standing liquids, and sludges were noted throughout the plant both on concrete areas and on bare soils. The concrete surfaces, containment areas, sumps, and drains were noted to be in disrepair and partially demolished. The insides of drains, sumps, and the concrete surface of the production area were largely not visible due to heavy build up of residues and liquids. Sludges and residues filled the final sump in the drain system, and were also observed covering the railings and area surrounding the sump. Tank cleaning residues were also noted just outside of the entryway cut into the side of one tank.

EPA is requiring a RCRA Facility Investigation (RFI) to be conducted at this unit to determine if there have been releases to the soil, surface water, and ground water.

57. **Clay Contact Plant Area**

The Clay Contact Plant Area is located in the eastern section of the Refinery on the west side of Green Avenue and to the north of the 8-C Crude Unit, in the eastern section of the plant. The Clay Contact Plant was constructed in the 1940s and is estimated to have ceased operations in 1983 when production of lubricating oils at the plant stopped. According to Facility representatives, the Clay Contact

Plant was demolished within a year or two after operations ceased. This area is the location of the former Clay Contact Plant which was part of a naphthenic lubricating and specialty oils production process that operated at MHR from the 1940s until 1983. At this plant, clay was used to clean oxides and other contaminants from the lubricating and specialty oils that had been treated with sulfuric acid. The cleaned oils were returned to the process and the spent clay was sent to a vacuum filter press where residual oil was removed from the spent clay. Any oil that was removed was returned to the process. A vacuum filter press was used to remove residual oils from the spent clay prior to disposal, with the recovered oil being returned to the process and the spent clay transported by screw conveyor into 30-yard steel containers.

Prior to 1979, the spent clay was shipped to off-site landfills for disposal. From 1979 until approximately 1983, the clay was taken to the SWF where it was mixed with sludges and slurries for treatment.

No information was available concerning the design and construction of this unit, except that the loading area was located at the northern end of the plant area. At the time of the VSI, the area was observed to be a gravel-covered parking lot. According to Facility representatives, at least two ground-water monitoring wells have been installed in the area of the Clay Contact Plant. However, the specific well locations could not be determined during the VSI and according to Facility representatives, no monitoring data is available.

The plant itself was demolished in about 1985. At the time of the VSI, Facility representatives could not provide any information on the condition of the plant or on the demolition activities, i.e., how residual products and wastes were handled, whether structures were cleaned before they were demolished, and where the demolition debris and residual products and wastes were disposed.

Approximately 30 cubic yards of spent clay from the Contact Plant (naphthenic lubes and specialty oils production) was generated per day in this unit. The clay was used to remove acids, caustics, sulfonates, water, and aromatics from specialty oils (Reference 324) and had a hydrocarbon content of approximately 30%.

Spent clay was managed in steel containers (similar to roll-off containers). No other controls were documented.

During the VSI, the area was observed to be covered with gravel. No staining or other evidence of release was noted.

No evidence of release(s) was identified in the available file material.

EPA is requiring a Verification Investigation (VI) to determine if there have been any releases to the soil.

59. **Slop Oil Tank 132**

The unit is located in the southeast section of the Facility, to the east of Hewes Avenue and to the south of the MHR rail lines. The date of construction of the tank is not known. The tank is currently in operation. The unit is a 15,000 barrel (630,000 gallon) above-ground, welded steel, fixed-roof cylindrical tank situated on a concrete pad. The area surrounding the tank is gravel covered, and there is no containment area surrounding the tank. This tank receives slop oil from the Slop Oil Tank V-29 (SWMU 58) and from various locations throughout the Facility including: oil separated from wastewater in MHR Oil/Water Separators (SWMUs 63 - 68, 70 - 79, and 81 - 94); used oil generated throughout the MHR (8-C Crude Unit Drip Showers - SWMU 53); residues from the bottoms of petroleum product containers; oil filtered from sludges and slurries in the Sludge Filter Press (SWMU 20) at the SWF; and liquid residues from product storage tank cleaning. In the tank, water and solids are separated from the slop oil through settling. The oil is sent to Slop Oil Tank 388 (SWMU 60). The water is discharged through the Combined Process/Storm Sewer System (SWMU 95) to the 16 Oil/Water Separators (SWMU 84 - 86) and then to the Middle Creek Surface Drainage System (SWMU 96). The solids are removed from the tank, annually.

During the VSI, the base of the tank appeared to be deteriorating, with rust and stains noted around the perimeter of the tank. Parts of the base were not visible as they were blocked by associated piping.

Slop oil from various sources around the Facility and the water and solids are separated out of the slop oil in the tank.

The tank is steel and closed. No other release controls were identified for the unit.

No evidence of release(s) was identified in the available file material. During the VSI, several small stains were noted at the base of the tank near tank valves. Portions of the base could not be observed during the VSI.

EPA is requiring that the integrity of this unit be determined.

60. **Slop Oil Tank 388**

The unit is located in the southeast section of the Facility, to the east of Hewes Avenue and to the south of the MHR rail lines. The date of construction of the tank is not known. The tank is currently in operation. The tank is a 80,900 BBL (about 3.4 million gallons) above-ground, welded steel, fixed roof cylindrical tank situated on a concrete pad. The tank receives slop oil from Slop Oil Tank 132 (SWMU 59). Water and solids are separated from the oil in Tank 132. The separated oil is then piped to refinery process units where it is used as an input.

This unit was identified subsequent to the VSI and, therefore, the condition of the unit was not determined.

Slop oil, from which water and solids have been separated, is managed in the tank.

The tank is steel and closed. No other release controls were identified for the unit.

No evidence of release(s) was identified in the available file material. The unit was not observed during the VSI.

EPA is requiring that the integrity of this unit be determined.

61. **Ballast Water Tank W-12**

The unit is located in the east section of the Facility. The date of construction of the tank is not known. The tank is currently in operation. The unit was identified after the VSI, based on additional information provided by the facility. However, Facility representatives were unable to provide information on size or materials of construction. The unit receives waste ballast water that is pumped from the ballast tanks of tanker ships docked at MHR. Ballast water typically contains oils and residues. Through settling in the tank water, oil and solids are separated. The water is discharged through the Combined Process/Storm Sewer System (SWMU 95) either directly to the Middle Creek Surface Drainage System (SWMU 96) or to the 16 Oil/Water Separators (SWMUs 84 - 86) and then to the Middle Creek Surface Drainage System (SWMU 96). The solids are cleaned out of the tank when necessary. The last cleaning was in 1983. The oil is returned to the MHR production units.

Waste ballast water contains residues and oils.

No release controls have been identified for the tank.

No evidence of release(s) was identified in the available file material. The unit was not observed during the VSI.

EPA is requiring that the integrity of this unit be determined.

62. **Heat Exchanger Bundle Cleaning Area**

The Heat Exchanger Bundle Cleaning Area is located in the central section of the Facility, between the Middle Creek Surface Drainage System (SWMU 96) and the Maintenance Shop. This unit has been in operation since before 1950. The unit is currently in operation. The unit consists of a concrete pad which is approximately 200 feet (east - west) by 75 feet (north-south) in area. The pad is not bermed and is surrounded by bare soil on all sides. Single steel rails run the length of the pad on the southern and northern edges. Grated in-ground concrete sumps run along the southern and portions of the east and west edges of the area.

Heat exchanger bundles from throughout the MHR are cleaned in the area. The tube bundles are placed horizontally on two roller stands and sprayed with high pressure water. There are grated in-ground concrete sumps to collect wash water. Wash water that flows into the sumps then flows either directly to the adjacent Middle Creek Surface Drainage System (SWMU 96) or to the Combined Process/Storm Sewer System (SWMU 95) and then on to the DELCORA wastewater treatment facility. Residues that settle out in the sumps are considered EPA Hazardous Waste Number K050, Heat Exchanger Bundle Cleaning Sludge. The sludge is periodically removed and taken to the SWF for treatment.

During the VSI, dark oily staining was noted throughout the area, both on the concrete and on the soil surrounding the pad, particularly on the south and east sides of the pad. The sumps contained varying quantities of sludge and several of the sumps appeared to be full.

Heat exchanger bundles are cleaned in the area using high pressure water. The wash water managed in the unit contains sludges and scale that build up in the exchanger tubes. The sludge that is collected in the area sumps is considered to be EPA Hazardous Waste Number K050, Heat Exchanger Bundle Cleaning Sludge. In the past, heat exchanger bundles were cleaned in this area using chemicals, most likely strong acids.

The area is on a concrete pad with sumps to collect wash water. The area is not bermed.

During the VSI, dark, oily staining was noted on the concrete pad and on the soil surrounding the pad, particularly on the south and east sides of the pad.

EPA is requiring a VI to determine if there have been any releases to the soil.

63. **1A Oil/Water Separator**

The 1A Oil/Water Separator is located in the northern section of the Facility, at the southern perimeter of the crude and distillates storage tank farm and just to the north of the Washington - Baltimore - Philadelphia Railroad Line. The separator was constructed in the 1940s or 1950s and is currently in operation. The unit is an American Petroleum Institute (API) oil/water separator used to separate oil and solids from wastewater generated in the northern tank farm areas. The 1A Oil/Water Separator consists of an in-ground concrete basin that is approximately 90 feet by 20 feet in area. The depth is estimated to be 20 feet. The length of the unit is divided into two separation sections or pockets, through which the water flows in series. The unit is surrounded by gravel-covered soil and approximately six-foot high gravel-covered soil berms. Oil is separated using half-pipe skimmers and overflow-underflow weirs as the water flows from the inlet on the north end to the outflow pump on the southern end. The oil separated in the unit is pumped through pipes to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60)). The solids that settle in the unit are removed approximately once every 14 months and trucked to the SWF for treatment (SWMUs 1 - 21). The treated wastewater is piped under the rail line and then through the Combined Process/Storm Sewer System (SWMU 95) to the head (northeastern terminus) of the Middle Creek Surface Drainage System (SWMU 96).

Wastewater managed in this unit consists largely of precipitation collected in tank containment areas, water that settles to the bottoms of storage tanks and is removed through discharge valves located near the tank bases, and condensate from steam heating systems for storage tanks. The products stored in the area, which are likely contaminants in the water, include crude oil and petroleum distillates.

The unit overflows to the Middle Creek Surface Drainage System (SWMU 96).

During the VSI, heavy dark oily staining was noted covering the bottom of the containment area around the unit to a depth of approximately two feet above the top of the unit,

indicating that oily water had recently overflowed from the unit (a major precipitation event had occurred several weeks before the VSI). The tops and outsides of the concrete walls of the unit were darkly stained, and several areas adjacent to the unit (gravel covered) appeared to be more heavily stained than the areas clearly stained in the recent storm (Photograph 63.1). The inside and bottom of the unit could not be inspected during the VSI.

EPA is requiring a VI to determine if there have been any releases to the soil.

EPA is also requiring that the integrity of this unit be determined.

64. **1B Oil/Water Separator**
67. **1E Oil/Water Separator**

These units were identified by the fact that the existing No. 1 separators (separators managing largely runoff from tank farms) are identified by letters in alphabetical order from northeast to southwest (e.g., 1A, 1C, 1D, and 1F), but that there are currently no 1B or 1E separators. The dates of operation of these units are unknown. The units are not currently in operation. Facility representatives indicated that there probably were 1B and 1E separators in the past, and hypothesized that they may have been API-type separators located in Middle Creek. However, no further information was obtained about these units.

It is assumed that the units managed oily wastewater.

The units likely discharged to the Middle Creek Surface Drainage System (SWMU 96).

No evidence of release(s) were identified in the available file material. The units were not observed during the VSI.

EPA is requiring a VI to determine if there have been any releases to the soil.

65. **1C Oil/Water Separator**

The 1C Oil/Water Separator is located in the central eastern section of the Facility, to the east of Hewes Avenue and on the western bank of the Middle Creek Surface Drainage System (SWMU 96). The separator was constructed in the 1940s or 1950s and is currently in operation. The unit is an American Petroleum Institute (API) oil/water separator used to separate oil and solids from wastewater generated in the Hewes Avenue tank farm areas. The 1C Oil/Water Separator consists of an in-ground concrete basin that is

approximately 90 feet by 20 feet in area. The depth of the unit is estimated to be 20 feet. The length of the unit is divided into two separation sections or pockets, through which the water flows in series. The oil separated in the unit is pumped through pipes to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60). The solids that settle in the unit are removed approximately once every 18 months and trucked to the SWF for treatment (SWMUs 1 - 21). The treated wastewater is discharged directly to the adjacent Middle Creek Surface Drainage System (SWMU 96). Oil is separated using half-pipe skimmers and overflow-underflow weirs as the water flows from the inlet on the north end to the outlet on the southern end. The unit is surrounded by gravel-covered soil and the Middle Creek Surface Drainage System (SWMU 96), which is within 15 feet of the unit on the eastern side. During the VSI, one half-pipe skimmer in the unit was improperly adjusted such that no oil was being removed (Photograph 65.3).

Wastewater managed in this unit consists largely of precipitation collected in tank containment areas, water that settles to the bottoms of storage tanks and is removed through discharge valves located near the tank bases, and condensate from steam heating systems for storage tanks. In the area that is drained to this separator, most of the tanks are used to store bunker fuel. Bunker fuel is thus a likely contaminant in the wastewater.

The units overflows to the Middle Creek Surface Drainage System (SWMU 96). There are no other release controls for the unit.

During the VSI, dark, oily staining was noted on the gravel surrounding the separator, particularly on the east side, indicating that the oily water has overflowed the separator in the recent past. In some areas, the staining extended to the edge of the adjacent Middle Creek Surface Drainage System (SWMU 96) (Photograph 65.4). The tops of the concrete sides of the unit and the lower portion of the railings surrounding the unit were extremely heavily stained. The gravel surrounding the unit appeared to be relatively new and to be stained less than the edges of the unit.

EPA is requiring a VI to determine if there have been any releases to the soil.

EPA is also requiring that the integrity of this unit be determined.

66. **1D Oil/Water Separator**

The 1D Oil/Water Separator is located in the central eastern section of the Facility, between Fifth Street and the Middle Creek Surface Drainage System (SWMU 96). The separator was constructed in the 1940s or 1950s and is currently in operation. The unit is an API oil/water separator used to separate oil and solids from wastewater generated in the Asphalt Plant Area (SWMU 56). The 1D Oil/Water Separator consists of an in-ground concrete basin that is approximately 90 feet by 20 feet in area. The depth of the unit is estimated to be 20 feet. The unit has mesh covers and is heated by steam lines located on the bottom of the unit. The unit is surrounded by a concrete surface on the east, gravel-covered soil on the west and north, and the Middle Creek Surface Drainage System (SWMU 96), which is adjacent to the unit on the southern side. There is a little influent wastewater into the unit with the majority of the waste managed is sludge-like residues from cleaning product storage tanks which are trucked to the separator and pumped into the unit through a trash rack. The sludges are heated to encourage separation. Oil separated in the unit is pumped through pipes to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60)). The sludges remaining in the unit are periodically pumped into vacuum trucks and transferred to the SWF for treatment (SWMUs 1 - 21). Separated wastewater is discharged directly to the adjacent Middle Creek Surface Drainage System (SWMU 96), although very little water is generated in this separator.

Wastes managed in this unit include sludges from tank cleaning (tank bottoms containing scale, rust, and crude oil and hydrocarbon product residues) and wastewater from the Asphalt Plant Area (SWMU 56). Although the majority of products stored at MHR are currently unleaded, in the past leaded tank bottoms would have been managed in this unit.

The unit is covered to minimize releases to air. There are steel plates surrounding the south end of the unit to control splashing as sludges are dumped into the unit.

During the VSI, dark oily staining was noted on the gravel and concrete surrounding the separator, particularly on the east side and in the area of the slop oil pump (southeast side). The concrete pad and the top of the concrete wall of the unit on the west side were heavily stained and oily. The valve box that drains to the Middle Creek Surface Drainage System (SWMU 96) was full of a dark liquid, heavily stained, and had a dark sludge-like material coating the sides (the valve was closed at the time of the VSI).

EPA is requiring a VI to determine if there have been any releases to the soil.

EPA is also requiring that the integrity of this unit be determined.

68. **1F Oil/Water Separator**

The 1F Oil/Water Separator is located in the central section of the Facility, between the Maintenance Shop and the Middle Creek Surface Drainage System (SWMU 96). The 1F Oil/Water Separator was constructed in the early 1970s and is currently in operation. The unit is a corrugated plate oil/water separator located below-ground, which is used to separate oil and solids from wastewater generated in the central tank farm areas of the MHR. The top of the unit, which is covered with steel plates, is approximately 15 by eight feet in area. It is estimated that the unit extends eight feet below the land surface. The top of the unit is surrounded by a paved area. Wastewater flows into the separator from the 1F Oil/Water Separator Feed Trench (SWMU 69). Oil separated in the unit is pumped through pipes to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60)). The sludges remaining in the unit are pumped from the unit approximately once a year and transferred to the SWF for treatment (SWMUs 1 - 21). Separated wastewater is discharged directly to the adjacent Middle Creek Surface Drainage System (SWMU 96).

The unit manages wastewaters containing oil and gasoline. Sources of wastewater include water from tank containment areas, water that settles to the bottoms of storage tanks and condensate from steam heating systems for storage tanks. This unit also manages contaminated wash water and spills from the Maintenance Shop.

The unit is covered and the surface of the unit is surrounded by a paved area.

No evidence of release(s) was identified in the available file material. During the VSI, the unit was observed to be filled with liquid and the integrity could not be determined. Oily sludges were observed around the unit, but appeared to be confined to the paved area.

EPA is requiring that the integrity of this unit be determined.

69. **1F Oil/Water Separator Feed Trench**

The 1F Separator Feed Trench is located in the central section of the Facility, between the 1F Oil/Water Separator (SWMU 68) and the Middle Creek Surface Drainage System (SWMU 96). The date of construction of the unit is not

known, although it is likely that it was constructed as part of the original sewer system for the Facility. The approximately 50-foot portion of the trench near the 1F Separator is a concrete, open topped trench which receives wastewater from the Combined Process/Storm Sewer System (SWMU 95) and from which wastewater flows into the 1F Oil/Water Separator through a submerged pipe. The portion of the trench to the east of the 1F Separator is filled with gravel, which in the western section, supports a corrugated steel pipe which transfers the wastewater. One six-foot section of this portion of the trench is not gravel filled, however, and at the time of the VSI, contained a dark oily liquid with an oily residue floating on top. A pipe was visible leading into and out of the open section on each side, through the gravel fill. The gravel filled portion of the trench was observed to extend approximately one hundred and fifty (150) yards toward the west, between the Heat Exchanger Bundle Cleaning Area (SWMU 62) and Fifth Street (Photograph 69.4), although the walls of the trench appear to have been destroyed in some areas.

Currently, the unit manages wastewaters containing oil and gasoline. Sources of wastewater include water from tank containment areas and water that settles to the bottoms of storage tanks and condensate from steam heating systems for storage tanks. This unit also manages contaminated wash water and spills from the Maintenance Shop. It is not known what wastes were managed in the unit prior to the current operations of the unit (i.e., before it was filled with gravel).

No release controls were identified for the unit.

During the VSI, dark oily staining was noted on the top and outsides of the concrete sides of the open section of the gravel-filled portion of the trench. An overflow lip appeared to have been knocked out of the concrete on the Middle Creek Surface Drainage System (SWMU 96) side. The soils on both sides of this section were stained heavily and the stains extended to the edge of the Middle Creek Surface Drainage System (SWMU 96) on the south side. The sides, top, and outside of the concrete walls of the trench in the portion adjacent to and feeding the 1F Oil/Water Separator, were also covered with dark staining. A desiccated sludge-like residue was noted on the soil on the north side of this area. The south side is adjacent to the Middle Creek Surface Drainage System (SWMU 96). In addition, oily staining was noted in low areas near the western extension of the gravel filled trench (next to the Heat Exchanger Bundle Cleaning Area (SWMU 62)).

EPA is requiring a VI to determine if there have been any releases to the soil.

70. **9A Oil/Water Separator**

71. **9B Oil/Water Separator**
72. **9C Oil/Water Separator**
73. **9D Oil/Water Separator**
74. **9E Oil/Water Separator**
75. **9F Oil/Water Separator**
76. **14A Oil/Water Separator**
77. **14B Oil/Water Separator**
78. **14C Oil/Water Separator**
79. **14D Oil/Water Separator**

The No.9 and 14 Oil/Water series Separators are located adjacent to one another in the central portion of the Facility, to the west of the 18 Plant and to the south of the rail lines and the Middle Creek Surface Drainage System (SWMU 96). The separators are estimated to have been constructed in the early 1940s. The separators were taken out of operation in 1984 when the plants feeding them were taken out of operation. These units are parallel API oil/water separators that were used to separate oil and solids from wastewater generated in the No.9 and 14 Plants, both of which are out of operation. The oil separated in the unit was pumped through pipes to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60)). Solids settled in the separators were reportedly removed periodically. The No.9 Plant separators (six separators on the west side of the cluster) were reportedly cleaned in 1984, at the time the units were taken out of operation. The treated wastewater was discharged through a corrugated pipeline that is part of the Discharge Pipe and Excavation at Nos.9 and 14 Oil/Water Separators (SWMU 80). The pipe is believed to have discharged directly to the Middle Creek Surface Drainage System (SWMU 96).

Wastewater managed in these units consisted of process wastewater generated in the Nos.9 and 14 Plant production processes. "Mercury-made" oil was produced at the No. 9 Plant.

No release controls were identified for these units.

During the VSI, dark oily staining was noted on the soil surrounding the separators in several locations, particularly on the east side. Areas under and surrounding piping, pumps, equipment, sumps, and small vaults associated with the separators were stained with dark oily materials. Areas of the demolished No.9 separators that were not filled with construction rubble were noted to contain dark oily liquids that have heavily stained the surrounding rubble and concrete. Some portions of the external walls in the liquid filled area had been demolished. Associated sumps and vaults were filled with liquids, sludges (capable of supporting small stones), and residues.

EPA is requiring a VI to determine if there have been any

releases to the soil.

EPA is also requiring that the integrity of this unit be determined.

80. **Discharge Pipe and Excavation at Nos.9 and 14 Oil/Water Separators**

The Corrugated Pipe is estimated to have been constructed in the early 1940s, and was taken out of operation (but not removed) in 1984. The date of construction of the excavation is not known. The Discharge Pipe and Excavation at Nos.9 and 14 Oil/Water Separators consists of an excavation and an approximately 200-yard section of 4-foot diameter corrugated pipe that transferred effluent water from the Nos.9 and 14 Oil/Water Separators (SWMUs 70-79) westward along the rail lines, and then discharged to the Middle Creek Surface Drainage System (SWMU 96). The pipe line is still in place but has not been in operation since 1984, when the Nos.9 and 14 Oil/Water Separators (SWMUS 70-79) were taken out of operation. The pipe is above-ground and situated on concrete saddles for most of its length, however, it runs underground under a rail spur just to the west of the Nos.9 and 14 Oil/Water Separators (SWMUs 70-79) and then under the rail lines to the Middle Creek Surface Drainage System (SWMU 96) near the 16 Oil/Water Separators (SWMUs 84-86). The excavation is located in the area of the rail spur below-ground section of the pipe. The excavation is approximately four-foot square in area and is shored with wooden planks. The excavation is approximately six feet deep and is full of dark oily liquid.

The pipe managed wastewater discharged from the Nos.9 and 14 Oil/Water Separators (SWMUs 70-79). This wastewater was contaminated with oil and gasoline.

There are no known release controls for the unit.

Facility representatives reported that when the corrugated pipe was in operation, there were continuous problems with leaks from the pipe. During the VSI, dark oily staining was noted on the soil beneath and around the pipe along its entire length. The excavation appeared to be located over the underground portion of the pipe that tunnels under the rail spur. The soil in the area surrounding the excavation was covered with dark oily staining and oily residues. The excavation was full of a standing dark oily liquid. The shoring around the excavation was also heavily stained.

EPA is requiring that an RFI be conducted to determine if there have been releases to the soil and ground water.

81. **10A Oil/Water Separator**
82. **10B Oil/Water Separator**

The No.10 Oil\Water Separators are located to the south of the 10-4 Plant in the northeastern section of the Facility. It is estimated that the No.10 Oil/Water Separators were constructed in the late 1950s. Steel covers were added in 1980 or 1981. The units are currently in operation. Operations conducted in these areas include catalytic cracking of gas oil and reduced crude to produce a gas/gasoline mixture and oils. These adjacent units are parallel API oil/water separators used to separate oil and solids from wastewater generated in the No.10 Plants. The units also include the piping, pumps, and equipment used to transfer the separated oil from the units. The oil separated in the unit is piped to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60)). Solids settled in the separators are removed every six months. The two No.10 Oil/Water Separators (A and B) together form an in-ground concrete basin that is approximately 100 feet by 35 feet in area. The depth of the basin is estimated to be 20 feet. The basin is separated into the two separators along the long axis by a concrete wall. Oil is separated using half-pipe skimmers and overflow-underflow weirs as the water flows from the inlets on the north end to the discharge reservoir on the southern end. A pump house located to the northwest of the units houses piping and equipment used to pump the separated oil to the slop oil system. The floor of the pump house is gravel-covered soil. An on-ground vertical cylindrical tank located to the northwest of the pump house was used in the past to accumulate and store the separated oil. The tank is no longer in use. The separated water is discharged directly to the Middle Creek Surface Drainage System (SWMU 96). The units are surrounded by gravel covered soil on all sides. The separators are covered with steel plate covers to minimize releases to air. Emissions from the units are permitted under PADER Permit No. 23-312-052.

These units manage wastewater generated in the No.10 Plant process areas. The effluent wastewater contains greater than 200 pounds per minute of volatile organic constituents (PADER requires covers for units having volatile loading above 200 lbs/minute).

The separators are covered. No other release controls were identified.

During the VSI, dark oily staining was noted on the gravel-covered soil surrounding the units. Areas of particularly heavy staining include the area surrounding the final discharge, the area surrounding the oil sump on the west side of the unit, and in and around the oil pump house.

EPA is requiring a VI to determine if there have been any releases to the soil.

EPA is requiring that the integrity of this unit be determined.

83. **12A Oil/Water Separator**

The No.12A Oil/Water Separator is located in the central eastern section of the Facility, to the south of the 12-3 Crude Unit. The separator was constructed in the early 1970s and is currently in operation. The unit is a corrugated plate oil/water separator used to separate oil and solids from wastewater generated in the No.12 Plant where crude oil is desalted and distilled to produce lubricating oils and residual fuels. Oil separated in the unit is pumped through pipes to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60)). The sludges generated in the unit are pumped from the unit approximately once a year and transferred to the SWF for treatment (SWMUs 1 - 21). Separated wastewater is discharged to the Middle Creek Surface Drainage System (SWMU 96) which flows to the west of the unit. The No.12A Oil/Water Separator is an in-ground corrugated plate separator. From the surface the unit appears to consist of two separator components and a discharge reservoir. The tops of each component, which are covered with steel plates, are approximately 20 by eight feet in area. It is estimated that the unit components extend ten feet below the land surface. The top of the unit is surrounded by gravel-covered soil.

Wastewater managed in this unit includes process wastewater containing: petroleum distillates, cooling tower blowdown, which may contain by-product salts and chlorine (past) or bromine (current); desalter water, which may contain salt, phenols, and hydrogen sulfide; and water used in equipment cleaning.

The unit is covered.

No evidence of release(s) was identified in the available file material. During the VSI, minor staining around the perimeter of the unit was noted, though this appeared to be rust. The integrity of the unit could not be assessed during the VSI, as the unit contained liquids.

EPA is requiring that the integrity of this unit be determined.

84. **16A Oil/Water Separator**
85. **16B Oil/Water Separator**
86. **16C Oil/Water Separator**

The No.16 Oil\Water Separators are located in the south central section of the Facility, on the southeastern corner of the intersection of Blueball Avenue and the Middle Creek Surface Drainage System (SWMU 96). These adjacent units are parallel API oil/water separators used to separate oil and solids from wastewater generated in the southeastern part of the Facility. This area includes the No.8-C Crude Unit and the No.18 Plant. The No.16 Oil/Water Separators were constructed in the 1940s or 1950s and are currently in operation. The oil separated in the unit is piped to the

slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60). Solids settled in the separators are removed every six months. The three No.16 Oil/Water Separators (A, B, and C) together form an in-ground concrete basin that is approximately 100 feet by 50 feet in area. The depth of the basin is estimated to be 20 feet. The basin is separated into the three separators along the long axis by concrete walls. Oil is separated using half-pipe skimmers and overflow-underflow weirs as the water flows from the inlets on the south end to the discharge reservoir on the northern end. The units also include oil and sludge sumps in which oil and sludge are collected and from which oils and sludge are removed (oil is pumped continuously and sludge is pumped periodically to trucks). Piping and equipment used to pump the separated oil to the slop oil system (SWMUs 58-60) are located in and to the south of a brick building on the southeast side of the units. The separated water is discharged directly to the Middle Creek Surface Drainage System (SWMU 96), which is located just to the north of the units. The units are surrounded by gravel-covered soil on all sides.

These units manage wastewater generated in the southeastern portion of the Facility. This includes wastewater generated in the No.8-C Crude Unit and the No.18 Plant. The No.8-C Plant wastewater includes cooling tower blowdown, which may contain by-product salts and chlorine (past) or bromine (current); desalter water, which may contain salt, phenols, and hydrogen sulfide; water used in equipment cleaning; and other process water. At the No.18 Plant, sulfuric acid is used to treat sodium napthenate from the No.8-C Plant to produce napthenic acids which are used elsewhere in the plant as feedstocks.

No release controls were identified for these units.

During the VSI, dark oily staining was noted on the tops and sides of the concrete walls of the units and on the gravel-covered soil surrounding the units in locations. The gravel-covered soil area under and surrounding the oil pump and piping at the southeast corner of the units was saturated with oil. An area of gravel-covered soil approximately 50 by 20 feet in area between the pump house and the rail line to the north of the units was also stained with an oily substance.

EPA is requiring a VI to determine if there have been any releases to the soil.

EPA is requiring that the integrity of this unit be determined.

87. **15A Oil/Water Separator**
88. **15B Oil/Water Separator**
89. **15C Oil/Water Separator**

90. **15D Oil/Water Separator**
91. **15E Oil/Water Separator**
92. **15F Oil/Water Separator**
93. **15G Oil/Water Separator**
94. **15H Oil/Water Separator**

The No.15 Oil\Water Separators are located in the southwestern section of the Facility, to the west of the Solid Waste Facility and to the northwest of the dam at the terminus of the Middle Creek Surface Drainage System (SWMU 96). The No.15 Oil/Water Separators were constructed in the 1940s or 1950s and are currently in operation. The No.15A Oil/Water Separator (east unit) manages wastewater generated in the No.15 Plants. The unit manage wastewaters from No.15 Plant which includes crude distillation, gas/gasoline separation, and production of benzene and xylene from toluene through disproportionation. The No.15B Separator manages wastewater generated in the No.17 Plants. Processes conducted at the No.17 Plants include catalytic reforming (production of inputs for production of gasoline, jet fuel, kerosene, and petrochemicals) and separation of petrochemicals (benzene, toluene, xylene). The Nos.15C - H Separators manage wastewater pumped from the Middle Creek Surface Drainage System (SWMU 96) neutralization basin. The wastewater consists of the combined effluent from all of the other MHR oil/water separators and other wastewater discharged directly to the Middle Creek Surface Drainage System (SWMU 96).

All wastewater generated at MHR is collected in the Middle Creek Surface Drainage System (SWMU 96) basin and managed through these separators, except non-contact compressor cooling water that is discharged to the York and Elliot Bypasses under an NPDES permit. These adjacent units are parallel API oil/water separators used to separate oil and solids from wastewater pumped from the Middle Creek Surface Drainage System (SWMU 96) (Separators C - H), from the No.15 Plant (Separator A), and from the No.17 Plant (Separator B). The oil separated in the units is transferred to the slop oil system (Slop Oil Tanks V-29, 132, and 388 (SWMUs 58 - 60)). Solids settled in the separators are removed every six months. The separated water is pumped through pipelines to the DELCORA wastewater treatment plant in Chester, PA, which, after secondary biological treatment, discharges the water into the Delaware River.

The eight No.15 Oil/Water Separators together form an in-ground concrete basin that is approximately 10,000 square feet in area. The depth of the basin is estimated to be 20 feet. The basin is divided by concrete walls into the eight separators along the north - south axis. Each separator is divided in half to form two separator pockets. Oil is retained in the first (northern) pockets by overflow-underflow weirs and is manually skimmed and pumped into tanker trucks, which transport the oil to Slop Oil Tank V-29

(SWMU 58). The separated water is pumped from a discharge reservoir at the north end of the units. The area surrounding the units is asphalt-paved on the west, north, and east sides and is gravel-covered soil on the south side. Separators A and B (east side separators) have steel covers because the influent wastewater to the 15A and B separators contains greater than 200 pounds per minute of volatile organic constituents (PADER requires covers for units having volatile loading above 200 lbs/minute). The remaining separators are uncovered.

The Nos.15A and B separators manage process wastewater contaminated with residues from crude distillates, gasoline, benzene, xylene, jet fuel, kerosene, and petrochemicals. The 15C - H Separators manage wastewater pumped from the Middle Creek Surface Drainage System (SWMU 96) neutralization basin which contains oils, and petroleum sludges.

Release controls were identified for the other units.

No evidence of release(s) was identified in the available file material. During the VSI, no evidence of releases from the units was identified.

EPA is requiring that the integrity of this unit be determined.

96. **Middle Creek Surface Drainage System**

The Middle Creek Surface Drainage System begins at a point to the north of the No.10 Oil/Water Separators (SWMUs 81 and 82) and extends southeast (parallel to Hewes Avenue) through the eastern portion of the Facility to a point just south of Middle Creek Road. From this point the unit extends southwest to the western boundary of the Facility, paralleling Middle Creek Road. The unit then bends southeast along the facility boundary until it discharges into the Delaware River. The Middle Creek Surface Drainage System is an unlined impoundment into which all wastewater generated at the MHR is discharged. Currently, the wastewater is stored to allow control of the flow rate of wastewater pumped from the unit and neutralized to control the pH. The wastewater is pumped from the unit to the DELCORA wastewater treatment facility (after treatment in the 15C - H Oil/Water Separators (SWMUs 89 - 94)).

The system that is now the Middle Creek Surface Drainage System first consisted of the natural drainage ways that flowed through the MHR area into which wastewater from MHR was discharged. The natural drainage system, which consisted of Walker's Run (north - south in the eastern portion of the Facility) and Middle Creek (east - west in the southern portion of the Facility), flowed directly into the Delaware River, probably somewhere in the area that now

is Phillips Island (SWMU 27).

In 1968, an interceptor dam was constructed across Middle Creek at a location to the north of Impoundment Tank T-101 (SWMU 32). The dam retains the water discharged into the Middle Creek Surface Drainage System within the banks of the previously natural streams and prevents its discharge to the Delaware River. The area immediately above the dam has been widened to create a storage basin. Reference 321 indicates that the basin is capable of containing spills of up to 10,000 barrels of oil. Wastewater is pumped from the basin to the Nos.15C - H Oil/Water Separators (SWMUs 89 - 94) and subsequently to the DELCORA wastewater treatment facility in Chester, PA. Water is also transferred back and forth between the basin and Impoundment Tank T-101, which provides additional wastewater storage capacity. The wastewater stored in the basin is neutralized (to maintain the pH between 6 and 8) using a system of mixers and an automatic valve that adds caustic or acid in response to automatic pH monitors.

The Middle Creek Surface Drainage System is unlined and is situated in the natural depressions of the previous streams. The entire length of the Middle Creek Surface Drainage System above the interceptor dam basin is approximately one half mile long and ranges in width from several feet to approximately 30 feet. The depth is estimated to range from one to ten feet. The basin portion of the drainage system, situated behind (to the east of) the intercepter dam, is approximately 70 feet at the widest point and is estimated to be up to 25 feet deep.

The addition of surface water to the Middle Creek Surface Drainage System from non-refinery areas has been eliminated through a system of underground bypass sewers that transfer storm water from the portion of the drainage basin above MHR (largely residential and light business areas) directly to the Delaware. However, since the system is unlined and is situated in natural stream channels in an area of shallow water table, the addition of ground water to the unit (or recharge to ground water) has not been eliminated.

Natural surface drainageways at the MHR have been used to dispose of wastewater from the plant since the location was first used for refinery operations, i.e., since the early 1900s. The specific date when each portion of the current system was first used to manage wastes is not known. The Middle Creek Surface Drainage System is currently in use. The interceptor dam, which currently forms the Middle Creek Surface Drainage System neutralization basin, was constructed in 1968 and is currently in operation.

The Middle Creek Surface Drainage System manages process wastewater and storm water generated throughout the MHR. The wastewater is either discharged directly into the unit, or is treated in MHR oil/water separators (SWMUs 63 - 68, 70

- 79, 81 - 86) prior to discharge into the unit.

The interceptor dam controls releases of contaminated water from the Middle Creek Surface Drainage System to the Delaware River (since 1968). Impoundment Tank T-101 provides storage capacity to control releases to the Delaware River and to the DELCORA POTW. The neutralization system controls the pH of water discharged to the Nos.15 C - H Oil/Water Separators (SWMUs 89 - 94) and then to the DELCORA POTW such that it remains between 6 and 8. The Nos.15 C - H Oil/Water Separator (SWMUs 89 - 94) control releases of oil and solids to the DELCORA POTW.

Numerous releases of oils and other contaminants to the Delaware River through the interceptor dam were documented in the files. There are also numerous incidents of releases of hydrocarbons from oil-water separators to the Middle Creek Surface Drainage System to the Delaware River documented throughout the file material. In 1981, a study of the wastewater treatment system concluded that the separators were "contributing considerable quantities of free oil to the wastewater stream." As a result of numerous violations, PADER issued MHR several Consent Orders and Agreements (COAs) requiring that MHR upgrade its wastewater treatment systems (References 108, 124, 140). Some of the modifications have been implemented (e.g., acid/base neutralization in the Middle Creek Surface Drainage System basin) and some have not (e.g., transformation of some of the separators to Dissolved Air Floatation (DAF) units).

During the VSI, Facility representatives indicated that the interceptor dam had been opened several weeks prior to the VSI during a particularly heavy precipitation event. The dam was raised to prevent overflows of the Middle Creek Surface Drainage System within the Facility. Wastewater was discharged to the Delaware River through the bottom of the dam, which operates as an underflow weir to contain floating oil in the basin. Facility representatives reported that PADER officials were notified and reports were filed as is required for any opening of the dam.

During the VSI, the wastewater in this unlined unit was observed to be very dark in color. In some locations near the unit a strong hydrocarbon smell was noted. The surface of the water was observed to support oily sheens in many locations. Throughout the entire unit, the banks of the unlined unit were observed to be saturated with a dark oily substance in areas where the water line was visible. Above the water line, dark staining was also visible in many areas indicating past overflows. In many locations, large quantities of accumulated dark sludges and residues were observed on the unlined banks and bottom of the unit. The banks of the neutralization basin area and the interceptor dam were observed to be covered with dark oily staining. The basin also contained large quantities of accumulated sludges.

During the VSI, it was also observed that sorbent booms and pillows maintained at the water surface of the Middle Creek Surface Drainage System by two bridges located below the interceptor dam and on the downstream side of the dam itself were stained brown, particularly on the under (water) side. The staining indicates that oil (or some lighter-than-water substance) enters the lower portion of the Middle Creek Surface Drainage System, which is below the interceptor dam. The downstream side of the concrete foundation of the interceptor dam was heavily stained with a dark substance at the water line. It was also observed that the banks of the downstream reaches of the lower portion of Middle Creek were stained to approximately one foot above the water line.

EPA is requiring that an interim measure be implemented and an RFI be conducted to determine if there have been releases to the soil, surface water, and ground water.

97. **Product Drip Collection Areas**

These units are located throughout the Facility in areas where small quantities of product chemicals are used regularly. No specific date of start-up of this practice can be identified, but it is likely that products have been dispensed in this manner since the plant began operating. Whether the drip pans and sumps have always been used or were added later, is not known. Lubricating oils, cleaning solutions, and other products are dispensed into containers from spigots attached to the bungs of 55-gallon drums stored vertically. Small metal pans (up to four feet by one foot in area with sides up to several inches in height) or small in-ground sumps (up to six inches deep) are located under the spigots to collect drippage. In-ground sumps similarly designed to collect drippage and spills are also located in areas on the docks where temporary connections are made between pipelines transferring products from storage and hoses filling tanker vessels. Based on observations made during the VSI it is estimated that there are between 25 and 50 of these units located throughout the Refinery.

These units receive drippage and spills of various product chemicals used at the Refinery including lubricating and cooling oils, cleaning solutions, and petroleum products produced by the Refinery that are shipped by tanker.

The small metal drip pans and in-ground sumps are designed to control releases to underlying soils and/or paved areas.

A limited number of these units were inspected during the VSI. Of those visited, the bottoms of the in-ground sumps could not be inspected. In some cases it was noted that the drip pans were not large enough to provide spill collection for all product drums or were not located under all of the spigots. In addition, several of the drip pans contained standing liquids. No evidence of release(s) was identified through review of the available files.

EPA is requiring that the integrity of this unit be determined.

98. **Aboveground Tank Containment Areas**

The Above-Ground Tank Containment Areas are located primarily in the northern and central sections of the Facility. The unit consists of the earthen and gravel-covered earthen bermed areas around product storage tanks which routinely and systematically release to the soils in these areas. During the VSI, heavy staining was observed in many of these areas and many tanks were observed to be leaking or discharging to these areas. The identified sources of the observed releases were numerous, including management practices, tank leaks through heating systems, and non-specific leaks from pumps, piping, and equipment and/or tanks.

Further, one of the current management practices for removing excess water from the product tanks is to open the pipe at the bottom (or side) of the tank and allow the water to drain directly onto soils in the containment area. According to Facility representatives, the drain pipe is closed at some point after the discharge begins to consist of product. During the VSI, large areas of staining and free product were observed under discharge pipes, indicating that the water contains a very high percentage of product and/or the discharges are not stopped before product is released to the containment area. During the VSI, product was observed to be actively released into the containment area at one tank and heavy staining and standing liquids were observed in many tank containment areas.

Several of the tanks in the oldest storage tank area at the MHR, the H - 13 area, were constructed as early as 1904. It is not known when the containment berms for the area were constructed. Other tank storage and containment areas were constructed as needed for Refinery operations. Some tank areas have been taken out of operation or demolished as the plants they were associated with have been taken out of operation or demolished (e.g., the Asphalt Plant Area (SWMU 57). The tank containment areas shown on the SWMU and AOC Location Map, Attachment A, are currently in existence. However, several existing tank containment areas are not shown on the map (e.g., the H-13 area).

Discharges and leaks of Refinery products or feedstocks, such as crude and bunker oils were observed in these areas.

The containment areas are themselves designed to control catastrophic releases of stored products to land and surface waters, however, they are unlined.

During the VSI, evidence of continuous releases into numerous unlined containment areas was observed. These continuous releases appear to be standard management practices. There was also heavy staining and standing oily liquids in numerous containment areas, and active releases

in at least one containment. Not all of the containment areas were observed during the VSI.

EPA is requiring a VI to determine if there have been any releases to the soil.

99. **Rail Car Loading/Unloading Areas and Associated Tracks**

The MHR Rail Car Loading/Unloading Areas and Associated Tracks are generally located along the same corridor as the Middle Creek Surface Drainage System (SWMU 96). The date of construction of rail lines into MHR is not known but is estimated to have been early in the 1900s. Loading and unloading of products in quantity are conducted at specific locations along the rail lines and the associated tracks lead from the rail line gate near Green and Fourth Streets to most of the southern and eastern sections of MHR. Major loading and unloading areas include two locations at the Lubes Services Center, one propane loading location in the LPG area, one location used primarily for off-loading propane and butane at 15 Plant, one location in the R and D area, and one location to the east of Hewes Avenue. The on-site rail system is approximately one mile in length and ranges from approximately ten feet (single rail) to 75 feet (multiple rails) in width.

Wastes managed in this unit include spillage and drippage of products shipped to and from the MHR by railcar.

No release controls were identified for this unit during the VSI or through review of the available file materials.

No evidence of release(s) was identified through review of the available file materials. During the VSI, heavy oil staining was observed between, next to, and along the rail lines in loading and unloading areas. The majority of the length of track within the Refinery had stains beside and between the rail lines. During the VSI, it was determined that past railcar management practices included transfer and staging of recently emptied cars with the bottom valves open, thus allowing dripping of residual product along the rail lines within the Facility.

EPA is requiring a VI to determine if there have been any releases to the soil and the sediments of the Delaware River.

100. **Used Oil Accumulation Areas**

These units are located throughout the Facility in areas where small quantities of used lubricating or cooling oils are removed from equipment and machinery. No specific date of start-up of this practice can be identified, but it is likely that used oils have been collected in this manner since the plant began operating. The units generally

consist of one or two 55-gallon drums located in process or maintenance areas. The used oils are poured into 55-gallons drums using funnels. The used oil is periodically collected and discharged into Slop Oil Tank V-29 (SWMU 58), from which it is managed through the slop oil system and eventually returned to the refinery production processes. The 55-gallon drums observed during the VSI were located on concrete process area surfaces, concrete pads, and gravel-covered soils.

Used petroleum lubricating and cooling oils are managed in this unit.

The waste is stored in 55-gallon steel drums.

A limited number of these units were inspected during the VSI. Of those visited, the area under the drums could not be inspected. In some cases staining was noted that indicated that some spillage had occurred as oils were poured into or pumped out of the drums. No evidence of release was identified through review of the available file materials.

EPA is requiring that the integrity of this unit be determined.

AOC A. **Stained Refinery Areas**

During the VSI, areas of heavily stained soils were observed throughout the Refinery. The staining appeared to be a dark, oily substance and staining was especially heavy in locations around and under valves, piping, pumps, and equipment. The stained areas varied in size from approximately one-foot square areas around leaking isolated valves or other equipment to greater than several hundred square feet for spill areas. Based on observations made during the VSI, it is estimated that there are hundreds of such areas located throughout the Facility.

During the VSI, Facility representatives indicated that there is a program at the MHR to remove and dispose of soils contaminated with oils and other hydrocarbon substances. Current practices for cleanup of spills and leaks includes removal of soil with a front end loader, analysis for oil and grease, mixing with sand if necessary, and off-site disposal under the PADER Module 1 process. Soil is excavated until visual observation indicates that all stained soil is removed. According to Facility representatives, excavated soils typically contain oil and grease in the 2-3% range, and may contain as much as 18% oil and grease. The sand/soil mixtures contain less than 5% oil and grease, as required for disposal under the Module 1 process. Past practices for removal of contaminated soils (prior to approximately 1980) were not known.

EPA is requiring a VI to determine if there have been any releases to the soil.

AOC B. **Underground Transfer Lines**

Underground transfer lines have been used to transfer crude oil and petroleum products to and from locations throughout MHR since the Refinery was first constructed. Underground transfer lines are located throughout the Facility and lead from the unloading docks to storage tanks, from storage tanks to process areas, from process areas to storage tanks, and from storage tanks to loading areas. The transfer lines include lines that are currently in use and lines that have been abandoned.

It is believed that the majority of the underground transfer lines are constructed of steel. The pipes range in size from those having inside diameters of several inches up to those having inside diameters of 24 inches or more. Typically, MHR underground transfer lines are located 30 inches below the surface of the soil. No leak detection systems were provided for the lines. Current Refinery practice for abandoning underground lines includes cleaning the lines out with water and isolating the abandoned lines with steel plates. Past practices used for abandoning lines are not known.

A program is currently underway at MHR to replace all existing underground transfer lines with above-ground transfer lines. The project is in the early stages, and some lines, particularly in the area of the docks, had already been replaced at the time of the VSI. An estimated completion date for the project could not be provided during the VSI.

During the VSI, Refinery personnel indicated that leaks from transfer lines occur and are detected through visual observation of the presence of petroleum substances on the soil surface. Repairs are then made as necessary. The file material reviewed indicates that underground transfer lines are believed to be the source of the kerosene-like substance found in the subsurface in the area of Dock No. 2 (AOC H) (Reference 141), and that in 1987 fuel and lube oils were found leaking from a 10-inch transfer line (Reference 152). During the VSI, underground transfer lines could not be observed due to the underground location. However, numerous cases of leaks from and stains around above-ground piping, valves, and other product transfer equipment at the Facility were observed during the VSI.

EPA is requiring that the integrity of this unit be determined.

AOC D. **Underground Storage Tanks**

Five existing underground storage tanks used to store petroleum products were identified during the VSI. These include a gasoline and diesel tank located to the south of the Mechanical Shop, an 8,000 gallon diesel tank on the southeast corner of Blueball Avenue and Second Street, and a diesel tank located to the north of the boiler house in the western section of the Facility. According to Facility personnel, all of these tanks were recently leak tested and none were found to be leaking.

EPA is requiring an integrity test of this unit be determined.

AOC E. **Underground Storage Caverns**

Five underground storage caverns are used at MHR to store petroleum products that are gaseous at standard temperature and pressure. The products are stored in the caverns under pressure, in liquid form. The caverns were constructed in the 1950s by blasting storage areas out from within the granite bedrock underlying MHR. The caverns themselves were not observed during the VSI due to their underground locations. The valves and piping used to fill and dispense product from several of the caverns were observed and no evidence of release was identified.

EPA is requiring that the integrity of this unit be determined.

AOC F. **8-C Plant PCB Transformer Area**

During the VSI, staining under a fenced transformer area and along a small trench leading from the area to a grated sewer drain was observed. A label on one of the transformers indicated that it contained PCBs. The transformer area is located to the southeast of the 8-C Crude Unit. The grated drain was reported to be a storm sewer drain (SWMU 95) leading to the Middle Creek Surface Drainage System (SWMU 96).

EPA is requiring a VI to determine if there have been any releases to the soil.

AOC G. **IF Oil/Water Separator Electrical Box**

During the VSI, a fenced, in-ground concrete vault approximately 15-feet square in area was observed to the southeast of the 1F Oil/Water Separator (SWMU 68). The concrete sides of the vault were approximately eight inches thick. The bottom could not be observed because the vault was full of water at the time of the VSI. The water was a dark color and the sides of the vault were stained with a dark oily material. Facility representatives indicated that

the vault was probably an access point to underground electrical equipment.

EPA is requiring that the integrity of this unit be determined.

AOC H. **Kerosene Contamination Area**

The Kerosene Contamination Area is located in the area of Dock No. 2 along the Delaware River in the south section of the Facility. A substance identified by the Facility as kerosene was found in the subsurface in the area. The area was first identified through investigation of reappearing sheens, releases, and tramp product incidents in the nearby Delaware River for which there was no immediate explanation. A recovery well was installed in 1979 to recover the kerosene-like substance from the surface of the ground water (Dock No. 2 Recovery Well, SWMU 51). Total recovery as of the end of 1988 was 31,000 gallons (Reference 147). Product thickness on the water table averaged 0.3 feet in May of 1988 (Reference 141).

Facility personnel reported that the suspected source of the kerosene was an underground kerosene transfer line (AOC B). The specific line or the location of the break in the line had not been identified, but the lines in the are of Dock No. 2 have been abandoned and replaced with above-ground lines.

EPA is requiring an RFI to be conducted to determine if there have been releases to the soil and ground water.

PERMIT

FOR CORRECTIVE ACTION, WASTE MINIMIZATION, AND OTHER HSWA REQUIREMENTS UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT AS AMENDED BY THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Permittee: Sun Refining and Marketing Company

Permit Number: PAD 98 055 0594

Facility: Delaware Avenue and Green Street
Marcus Hook, Pennsylvania

This Permit is issued by the United States Environmental Protection Agency (EPA) under the authority of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) and the Hazardous and Solid Waste Amendments of 1984 (HSWA), 42 U.S.C. § 6901 et seq., and EPA regulations at 40 C.F.R. Parts 260-271 and Part 124, to Sun Refining and Marketing Company (hereinafter the Permittee) to meet the requirements of HSWA at the Permittee's facility in Marcus Hook, Pennsylvania at latitude 39°49'005" North and longitude 075°24'041" West (the Facility).

The complete RCRA Permit, for purposes of Section 3005(c) of RCRA, 42 U.S.C. § 6925(c) consists of two portions: this Permit, issued by EPA, which addresses the provisions of HSWA, and the permit issued by the Pennsylvania Department of Environmental Resources (PADER) on July 6, 1990, which addresses the provisions of Code of Pennsylvania Regulations, Title 26, Subtitle 13, for which the Commonwealth of Pennsylvania has received authorization under Section 3006(b) of RCRA, 42 U.S.C. § 6926(b), to administer and enforce in lieu of the federal hazardous waste management program under RCRA. As of the date of issuance of this permit, the Commonwealth of Pennsylvania has not received authorization to administer the provisions of HSWA. This permit, which addresses provisions of HSWA, will be enforced by EPA. The PADER permit will be enforced by PADER.

The Permittee must comply with all terms and conditions of this Permit. This Permit consists of the conditions contained herein (Parts I, II and Attachments A-E,) and the applicable regulations contained in 40 C.F.R. Parts 124, 260 through 264, 268 and 270 as specified in the permit or which are, by statute, self-implementing. (40 C.F.R. § 270.32(c))

This Permit is based on the assumption that the information provided to EPA by the Permittee is accurate. Section 3005(c)(3) of RCRA provides authority to review and amend the permit at any time. Any inaccuracies found in the information submitted by the Permittee may be grounds for the termination, modification or

revocation and reissuance of this permit (see 40 C.F.R. §§ 270.41, 270.42 and 270.43). The Permittee must inform EPA of any deviation from or changes in the submitted information which would affect the Permittee's ability to comply with the applicable statutes, regulations or permit conditions.

This permit is effective as of _____, and shall remain in effect until _____, unless revoked and reissued, modified or terminated in accordance with 40 C.F.R. §§ 270.41, 270.42, 270.43 or continued in accordance with 40 C.F.R. § 270.51(a).

PART I - STANDARD CONDITIONS

A. DEFINITIONS

For the purposes of this permit, terms used herein shall have the same meaning as those set forth in 40 C.F.R. Parts 260 through 264, 268 and 270, unless this permit specifically states otherwise. Where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the terms. The following definitions also apply to this permit.

1. Days - except as otherwise provided herein, calendar days.

2. Facility - all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA, except or permit condition I.B., for which the definition in 40 C.F.R. § 260.10 shall apply.

3. Hazardous Constituent - any constituent identified in Appendix VIII of 40 C.F.R. Part 261, or any constituent identified in Appendix IX of 40 C.F.R. Part 260.

4. Regional Administrator - Regional Administrator of the United States Environmental Protection Agency, Region III, his designee or authorized representative.

5. Release - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.

6. Solid Waste Management Unit - any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

7. Unit - The term "unit" refers to any contiguous area of land on or in which waste is placed.

B. STANDARD DUTIES AND REQUIREMENTS

1. Duty to Comply

   a. The Permittee shall comply with all conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued under 40 C.F.R. § 270.61 or the analogous provisions of the State's authorized hazardous waste management regulations. Any other permit noncompliance constitutes a

violation of RCRA and is grounds for enforcement action; permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application. (40 C.F.R. § 270.30(a))

b. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit. (40 C.F.R. § 270.30(c))

2. Duty to Mitigate

In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (40 C.F.R. § 270.30(d))

3. Duty to Properly Operate and Maintain

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment, monitoring, and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems when necessary to maintain compliance with the conditions of the permit. (40 C.F.R. § 270.30(e))

4. Duty to Monitor and Record Results

Pursuant to 40 C.F.R. § 270.30(j), the Permittee shall comply with the following requirements.

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. All sampling and analyses shall be of adequate quality, scientifically valid, of known precision and accuracy, and of acceptable completeness, representativeness and comparability. Laboratory analysis of each sample must be performed using an appropriate method for testing the parameter(s) of interest taking into account the sample matrix. The test methods found in the agency publication, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (SW-846), 3rd Edition, as updated, shall be used for: The Toxicity Characteristic analytes (40 C.F.R. § 261.24); the Free Liquid Test

(Method 9095) used to determine if free liquid is a component of a waste as a specific requirement for bulk and containerized wastes (40 C.F.R. §§ 264.314 (c) and 265.314 (d); and the chemical analysis of wastes for hazardous waste incineration permits (40 C.F.R. § 270.62 (b)(2)(i)(C)).

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, the certification required by 40 C.F.R. § 264.73(b)(9) and records of all data used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, certification or application. These periods may be extended by request of the Regional Administrator at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. (40 C.F.R. § 264.74) The Permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations for the active life of the facility, and, for disposal facilities, for the post-closure care period as well.

c. Records of monitoring information shall specify:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

5. Duty to Provide Information

The Permittee shall furnish, within the specified time, any relevant information which the Regional Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Regional Administrator upon request, copies of records required to be kept by this permit. (40 C.F.R. §§ 270.30(h) and 264.74(a))

6. Duty to Allow Inspection and Entry

Pursuant to 40 C.F.R. § 270.30(i), the Permittee shall allow the Regional Administrator, or authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.

7. Duty to Submit Certified Documents

a. At least three copies of all plans, reports, notifications or other documents which are required by this permit to be submitted to the Regional Administrator or EPA, shall be sent Certified Mail, Return Receipt Requested, or hand-carried to:

RCRA Programs Branch (3HW51)
EPA Region III
841 Chestnut Building
Philadelphia, PA 19107
(215)597-0980
Attn: Paul Gotthold

Each report, notification or other submission shall reference the Permittee's name, permit number and facility address. In addition, one copy of such submission shall be sent to:

PADER
Southeast Regional Office
Lee Park Suite 6010
555 Northlane
Conshohocken, PA 19428
Attn: Lawrence Lunsk

b. All reports or other information submitted to the Regional Administrator or EPA shall be signed and certified as required by 40 C.F.R. §§ 270.11(b) and 270.30(k).

8. Duty to Maintain Documents at the Facility
The Permittee shall maintain at the Facility a written operating record that complies with all the requirements of 40 C.F.R. § 264.73. The Permittee shall maintain at the Facility all documents required by this permit including amendments, revisions, and modifications to these documents.

9. Duty to Minimize Waste

The Permittee shall certify no less often than annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that the Permittee generates to the degree determined by the Permittee to be economically practicable; and the proposed method of treatment, storage or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment. The Permittee shall maintain each such certification of waste minimization at the Facility until closure of such Facility. (40 C.F.R. § 264.73(b)(9))

Within (90) calendar days of the effective date of this permit, the Permittee shall submit to the Regional Administrator a copy of their annual Waste Minimization certification, and a description of their Waste Minimization Program. Attachment F lists documents and sources available to develop a Waste Minimization Program.

10. Duty to Comply with the Land Disposal Restrictions

All activities of the Permittee which involve the land disposal of hazardous waste are subject to the provisions of RCRA Sections 3004 (b)-(m), 42 U.S.C. § 6924 (b)-(m), and applicable regulations thereunder at 40 C.F.R. Part 268.

11. Reporting Requirements

a. Immediate Reporting of Emergencies to Local Authorities and the On-Scene Coordinator or the National Response Center.

(1) Pursuant to 40 C.F.R. § 264.56(d)(1) and (2), if the Facility's emergency coordinator determines that the Facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the Facility, he/she must report his/her finding as follows:

(a) If his/her assessment indicates that evacuation of local areas may be advisable, he/she must immediately notify appropriate local authorities. He/she must be available to help appropriate officials decide whether local areas should be evacuated; and

(b) He/she must immediately notify either the government official designated as the On-Scene Coordinator for that geographical area, (in the applicable regional contingency plan under 40 C.F.R. Part 1510) or the National Response Center (800-424-8802).

(2) The report must include:

(a) Name and telephone number of the reporter;

(b) Name, address, and telephone number of the facility;

(c) Date, time, and type of incident (e.g., release, fire);

(d) Name and quantity of material(s) involved, to the extent known;

(e) The extent of injuries, if any; and

(f) The possible hazards to human health or the environment, outside the Facility;

b. Twenty-four Hour Reporting to the Regional Administrator

(1) Pursuant to 40 C.F.R. § 270.30(l)(6), the Permittee shall report to the Regional Administrator any noncompliance which may endanger health or the environment. Information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time Permittee becomes aware of the circumstances, including:

(a) Information concerning a release of any hazardous waste or hazardous constituent that may cause an endangerment to public drinking water supplies.

(b) Any information of a release or discharge of hazardous waste, hazardous constituents or of fire or explosion from the Facility, which could threaten the environment or human health outside the Facility.

(2) The description of the occurrence and its cause shall include:

(a) Name, address and telephone number of the owner or operator;

(b) Name, address and telephone number of the Facility;

(c) Date, time and type of incident;

(d) Name and quantity of material(s) involved;

(e) The extent of injuries, if any;

(f) An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and

(g) Estimated quantity and disposition of recovered material resulting from the incident.

(3) A written submission shall also be provided to the Regional Administrator within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Regional Administrator may waive the five (5) day written notice requirement in favor of a written report within fifteen (15) calendar days of notification of such decision.

c. Failure to Submit Relevant and/or Accurate Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator, the Permittee shall notify the Regional Administrator of such failure within seven (7) calendar days of becoming aware of such deficiency or inaccuracy. The Permittee shall submit the correct or additional information to the Regional Administrator or Director no later than fourteen (14) days of becoming aware of the deficiency or inaccuracy. (40 C.F.R. § 270.30(l)(11)) Failure to submit the information required in this permit or misrepresentation of any

submitted information is grounds for termination of this permit. (40 C.F.R. § 270.43)

d. Noncompliance with Schedules for Interim and Final Requirements

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date. (40 C.F.R. § 270.30(l)(5))

e. Reporting Planned Changes and Anticipated Noncompliance

(1) The Permittee shall give notice to the Regional Administrator, at least 30 days prior to any planned physical alterations or additions to the permitted facility. The Permittee shall give the Regional Administrator at least 45 days advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. For purposes of this Permit/condition I.B.11.e.(1) only, the definition of "Facility" in 40 C.F.R. § 260.10 shall apply. (40 C.F.R. § 270.30 (1)(1)).

(2) For a new facility, the Permittee may not treat, store, or dispose of hazardous waste; and for a facility being modified, the Permittee may not treat, store, or dispose of hazardous waste in the modified portion of the facility except as provided in 40 C.F.R. § 270.42. (40 C.F.R. §§ 270.30(l)(1) and (2))

f. Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above, at the time monitoring reports are submitted. The reports shall contain the information listed in permit condition I.B.11.b.(2). (40 C.F.R. § 270.30(l)(10))

g. Biennial Report

Pursuant to 40 C.F.R. § 270.30(l)(9), a report must be submitted to the Regional Administrator covering facility activities during odd-numbered calendar years. The report shall be submitted by March 1 of each even numbered year ad shall contain the information required in 40 C.F.R. § 264.75.

h. Manifest Discrepancy Report

Pursuant to 40 C.F.R. § 270.30(l)(7), if a discrepancy in a manifest is discovered, the Permittee must attempt to reconcile the discrepancy. If not resolved within fifteen (15) days of the discovery, the Permittee must submit a letter report, including a copy of the manifest, to the Regional Administrator. (40 C.F.R. § 264.72 and 270.30(l)(7))

i. Unmanifested Waste Report

Pursuant to 40 C.F.R. § 270.30(l)(8), if the Permittee receives unmanifested waste, the Permittee must report such waste to the Regional Administrator no later than fifteen (15) days after its receipt. (40 C.F.R. § 264.76 and 270.30(l)(8))

12. Stabilization

The goal of stabilization is to control or abate imminent threats to human health and/or the environment from releases at RCRA facilities, and/or to prevent or minimize the further spread of contamination while long-term remedies at facilities are pursued.

C. APPROVAL/DISAPPROVAL OF SUBMISSIONS

EPA will review the plans, reports, schedules and other documents (hereinafter collectively referred to as "submission") submitted which require EPA approval. EPA will notify the Permittee in writing of EPA's approval or disapproval of each submission.

Each submission required by this permit is, upon approval by the Regional Administrator, incorporated into this permit. Any noncompliance with such EPA-approved submission shall be deemed noncompliance with this permit.

In the event of EPA disapproval in whole or in part of any submission, the Regional Administrator shall specify the deficiencies in writing. Such disapproval shall not be subject to the Dispute Resolution provision set forth in permit condition I.D. of this permit. The Permittee shall notify the submission to correct/address the specified deficiencies within a reasonable time period established by the Regional Administrator taking into account the tasks to be performed, and submit the revised submission to EPA for approval. If the revised submission is disapproved, EPA will notify the Permittee of the deficiencies in writing and specify a schedule for the Permittee to correct the deficiencies and resubmit the submission to EPA. The Permittee shall correct the deficiencies as directed by EPA and forward the revised submission to EPA within the time period specified by EPA. In the event the Permittee disagrees with EPA's disapproval of the revised submission the Permittee shall notify EPA in writing and

the disagreement shall be resolved in accordance with the Dispute Resolution provision in permit condition I.D. of this permit.

D. DISPUTE RESOLUTION

Except as otherwise provided in this permit, in the event the Permittee disagrees in whole or in part with EPA disapproval of any submission required by this permit, the Permittee shall notify EPA in writing of its objections, and the basis therefor, within fourteen (14) days of receipt EPA's disapproval. Such notice shall set forth the specific matters in dispute, the position the Permittee asserts should be adopted as consistent with the requirements of the permit, the basis for the Permittee's position and any matters considered necessary for EPA's determination. EPA and the Permittee shall have an additional fourteen (14) days from EPA receipt of the notification to meet or confer to resolve any disagreement. In the event agreement is reached, the Permittee shall submit such agreement. If agreement is not reached within the 14-day period, EPA will notify the Permittee in writing of its decision on the dispute and the Permittee shall comply with the terms and conditions of EPA's decision in the dispute.

E. EFFECT OF PERMIT

1. This permit authorizes only the management of hazardous waste expressly described in this permit and does not authorize any other management of hazardous waste.

2. Issuance of this permit does not convey property rights of any sort or any exclusive privilege, nor does it authorize any injury to persons or property, or invasion of other private rights, or any infringement of State or local laws or regulations. (40 C.F.R. §§ 270.30(g) and 270.4(b) and (c)) Compliance with the full permit during its term constitutes compliance with Subtitle C of RCRA except for those requirements not included in the permit which become effective by statute or which are promulgated under 40 C.F.R. Part 268. (40 C.F.R. § 270.4(a)) However, compliance with the terms of this permit does not constitute a defense to any action brought under Section 7003 of RCRA, 42 U.S.C. § 6973, Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9606(a) (commonly known as Superfund), or any other law governing protection of public health or welfare or the environment.

3. Nothing contained herein shall in any way be deemed to waive the Permittee's obligation to comply with 40 C.F.R. Part 270, Subpart C, and applicable regulations set forth at 40 C.F.R. Part 124.

F. PERMIT MODIFICATION, REVOCATION AND REISSUANCE

1. This pe[illegible]t may be modified, revoked and reissued, or termina[illegible] for cause as specified in 40 C.F.R. §§ 270.41, 270.42 [illegible] 270.43. The filing of a request for a permit modifi[illegible]n, revocation and reissuance, or termination or the notifi[illegible]n of planned changes or anticipated noncompliance on the [illegible] of the Permittee does not stay the applicability or enf[illegible]ility of any permit condition (40 C.F.R. § 270.[illegible]. Review of any application for a permit renewal shall [illegible]er improvements in the state of control and measur[illegible] technology, as well as changes in applicable regulat[illegible] and laws. (RCRA Section 3005(c)(3), 42 U.S.C. § 6925[illegible])

2. The Re[illegible] Administrator will modify the permit in accorda[illegible]ith 40 C.F.R. § 270.41 and Section 3005(c) of RCRA in the [illegible] that investigations required in this Permit, or any oth[illegible]formation available to the Regional Administrator, identif[illegible]d waste management units that require corrective measure[illegible]nancial assurance by the Permittee is required if c[illegible]rrect[illegible]asures are necessary (40 C.F.R. § 264.101(b)). T[illegible]s pa[illegible]n does not limit the Regional Administrator's a[illegible]thori[illegible] otherwise modify this permit in accordance with 40 C.F.[illegible]t 270, Subpart D.

3. This pe[illegible]ay be modified if the Regional Administrator determi[illegible]od cause exists for modification, such as an act of God, [illegible]e, flood, materials shortage or other events over which t[illegible]mittee has little or no control and for which there i[illegible]easonably available remedy. (40 C.F.R. §270.41

G. PERMIT EXPI[illegible] AND CONTINUANCE

1. Pursuant[illegible]0 C.F.R. § 270.50, this permit shall be effective for a f[illegible]erm not to exceed ten years. Pursuant to 40 C.F.R. [illegible]1, this permit and all conditions herein will remain [illegible]ect beyond the permit's expiration date if the Permitte[illegible]s submitted a timely and complete application for a new pe[illegible](see 40 C.F.R. §§ 270.10 and 270.14 - 270.29) and, th[illegible]o fault of the Permittee, the Director has not issued a[illegible]ermit under 40 C.F.R. § 124.15 on or before the expirat[illegible]e of this permit. In addition, each permit for a land [illegible] facility shall be reviewed by the Regional Administ[illegible]five years after the date of permit issuance or reissuan[illegible] shall be modified as necessary, as provided in 40 C.F.[illegible]0.41. (40 C.F.R. § 270.50(d))

2. If the [illegible]ee wishes to continue an activity regulated by this per[illegible]er the expiration date of this permit, the Permitte[illegible]submit a complete application for a new permit at least [illegible]ys before this permit expires, unless permiss[illegible] later date has been granted by the Regional Administ[illegible] (40 C.F.R. §§ 270.10(h) and 270.30(b))

H. TRANSFER OF PERMIT

1. This permit is not transferable to any person, except after notice to the Regional Administrator. (40 C.F.R. § 270.30(l)(3)) A permit may be transferred by the Permittee to a new owner or operator only if the permit has been modified or revoked and reissued under 40 C.F.R. § 270.40(b) or 270.42(b)(2) to identify the new permittee and incorporate such other requirements as may be necessary under the appropriate Act. (40 C.F.R. § 270.40)

2. At least 30 days prior to transferring ownership or operation of the Facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of 40 C.F.R. Part 264 and 270, and at the same time shall send a copy of such notice to the Regional Administrator. (40 C.F.R. § 264.12(c))

I. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. (40 C.F.R. § 124.16(a)(2))

PART II - SPECIFIC FACILITY CONDITIONS

A. CORRECTIVE ACTION FOR CONTINUING RELEASES; PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Section 3004(u) of RCRA, 42 U.S.C. § 6924(u), and regulations codified at 40 C.F.R. § 264.101, provide that all permits issued after November 8, 1984 must require corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit (SWMU), regardless of when waste was placed in the unit.

Under Section 3004(v) of RCRA, 42 U.S.C. § 6924(v), EPA may require that corrective action at a permitted facility be taken beyond the facility boundary where necessary to protect human health or the environment, unless the owner or operator of the facility concerned demonstrates to the satisfaction of EPA that, despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action.

Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), and 40 C.F.R. § 270.32(b) provide that each permit shall contain such terms and conditions as the Administrator determines necessary to protect human health and the environment.

This permit requires the Permittee to implement Interim Measures activities and to conduct Integrity Assessments, Verification Investigations (VI), and RCRA Facility Investigations (RFI) for suspected releases of hazardous constituents. If, on the basis of the Interim Measures Implementation, Integrity Assessments, VIs, RFIs and any other relevant information, the Regional Administrator determines that a Corrective Measures Study is necessary, the Permittee will be required to conduct a Corrective Measures Study (CMS) for those releases from SWMUs which threaten human health or the environment.

The Permittee may, at any stage of the implementation of interim measures activities or VI or RFI, if applicable, submit to the Regional Administrator, in writing, a proposal to perform corrective measures for the remediation of any release of hazardous waste or hazardous constituent at or from the SWMU/AOC in lieu of the interim measures activities or VI or RFI. Any such proposal shall include a schedule for performance of such corrective measures. For any releases to soil and groundwater, the Permittee must demonstrate in such proposal, to the Regional Administrator's satisfaction, that the subsurface conditions and contaminant plume relating to such release have been adequately characterized and that the proposed corrective measures will adequately remove, contain, or treat the released hazardous waste or hazardous constituents as necessary to protect human health and

the environment. The nature and extent of releases to other media shall likewise be adequately characterized. The Regional Administrator shall review such proposal and notify the Permittee of his approval or disapproval of such proposal. If the Regional Administrator approves such a demonstration, the Permittee shall be allowed to dispense with certain stages of the investigation, as described in the Regional Administrator's approval of the demonstration. No term or condition of this permit shall be affected by such proposal until such time as this permit has been modified to include such proposal. The Regional Administrator or Permittee may seek modification of this permit pursuant to 40 C.F.R. § 270.41 or § 270.42 and § 124.5 to include such proposal.

Specific requirements for each SWMU/AOC are described in the following paragraphs. The following Attachments are included as part of this permit:

Attachment A: Hazardous Waste and Hazardous Constituent List

Attachment B: Quality Assurance Plan and Sample Collection Methods and Procedures Plan

Attachment C: RCRA Facility Investigation

Attachment D: Corrective Measures Workplan

Attachment E: Waste Minimization

B. RCRA FACILITY INVESTIGATION

1. Phase I

Within one-hundred eighty (180) calendar days after the effective date of this permit, the Permittee shall submit to the Regional Administrator and the Pennsylvania Department of Environmental Resources (PADER), Conshohocken, Pennsylvania, Bureau of Waste Management, a workplan for Phase I of the RCRA Facility Investigation (RFI). The workplan will be reviewed and approved by the Regional Administrator in accordance with permit condition I.D. (Approval/Disapproval of Submissions) of this permit. The Phase I Workplan shall include a schedule and procedures for installation and monitoring of perimeter ground water wells. The Permittee shall comply with Section 3.c (1) of Attachment C to this permit.

2. Phase II

a. Within one-hundred eighty (180) calendar days after receipt of the Regional Administrator's approval of the Phase I RFI Report, the permittee shall submit to the Regional Administrator and PADER, a workplan for Phase II of the RCRA

Facility Investigation (RFI). The workplan will be reviewed and approved by the Regional Administrator in accordance with Permit Condition I.D. (Approval/Disapproval of Submissions), of this permit. The Phase II RFI Workplan shall meet the objectives and requirements specified in Paragraph II.B.4. below.

b. The Phase II RCRA Facility Investigation Workplan shall comply with the requirements of Attachments A through D and shall address the following SWMUs:

SWMU Number	SWMU Name
23.	Old Sludge Basin
24.	Old Sludge Decant Basin
25.	Old 12 Plant Sludge Basin
26.	Old 18 Plant Sludge Basin
27.	Phillips Island Area

3. Phase III

a. Within one-hundred eighty (180) calendar days after receipt of the Regional Administrator's approval of the Phase II RFI Report, the Permittee shall submit to the Regional Administrator and PADER, a workplan for Phase III of the RCRA Facility Investigation (RFI). The workplan will be reviewed and approved by the Regional Administrator in accordance with Permit Condition I. D. (Approval/Disapproval of Submissions), of this permit. The Phase III Workplan shall meet the objectives and requirements specified in Paragraph II.B.4. below.

b. The Phase III RCRA Facility Investigation Workplan shall comply with the requirements of Attachment A through D and shall address the following SWMUs/AOC:

SWMU/AOC Number	SWMU/AOC Name
56	Asphalt Plant Area
80	Discharge Pipe & Excavation at 9 & 14 Oil/Water Separators
H	Kerosene Contamination Area

4. The RFI objectives are to:

(a) Characterize the nature, extent, concentration and rate of migration of releases of hazardous waste or hazardous constituents into groundwater, surface water, and soil;

(b) Identify potential receptors;

(c) Provide a detailed geologic and hydrogeologic characterization of the area surrounding and underlying each SWMU;

(d) Determine the need for scope, if any, of corrective measures based on a qualitative risk assessment as described in Attachment D; and

(e) Generate the information described in Attachment D.

5. If the Phase II and/or Phase III RFI Reports as approved by the Regional Administrator includes a recommendation for a RCRA Facility Investigation (RFI) for any additional SWMU, then, within one-hundred eighty (180) calendar days after receipt of said approval the Permittee shall submit to the Regional Administrator and the PADER a Phase IV RCRA Facility Investigation (RFI) Workplan addressing the SWMU. If the Phase II and/or Phase III RFI Reports recommend and RFI for more than one SWMU, a single Phase IV RFI Workplan addressing all of the SWMUs may be submitted. The Workplan will be reviewed and approved by the Regional Administrator in accordance with Permit Condition I.D. (Approval/Disapproval of Submissions), of this permit. Any Phase IV RFI Workplan shall meet the objectives and requirements specified in Paragraph II.B.4. above and shall comply with the requirements of Attachments A through D to this permit.

C. UNIT INTEGRITY ASSESSMENT

1. Within 180 calendar days after receipt of the Regional Administrator's approval of the Phase III RFI Report, the Permittee shall submit to the Regional Administrator for approval and to the Pennsylvania Department of Environmental Resources (PADER) Conshohocken, Pennsylvania, Bureau of Waste Management a Unit Integrity Assessment Report as described in paragraph b.(1) below for the following SWMUs/AOCs:

SWMU Number	SWMU Name
13.	Tank No. 50 Lime Slurry Tank
15.	Tank No. 55 Sludge Decant Tank
21.	Filter Cake Knock-out Area
32.	Impoundment Tank T-101
43.	10-4 Plant Sour Water Stripper
50.	Mechanical Shop Equipment Wash Rack
53.	8-C Unit Drip Showers
55.	Benzene Vapor Recovery System
59.	Slop Oil Tank 132
60.	Slop Oil Tank 388
61.	Ballast Water Tank W-12

63.	1A Oil/Water Separator
66.	1D Oil/Water Separator
68.	1F Oil/Water Separator
70-79.	9 and 14 Oil/Water Separators
81,82	10 Oil/Water Separators
83.	12A Oil/Water Separator
84-86.	16Oil/Water Separators
87-94.	15 Oil/Water Separators
95.	Combined Process/Storm Sewer System
97.	Product Drip Collection Areas
100.	Used Oil Accumulation Areas
AOC B.	Underground Transfer Lines
AOC D.	Underground Storage Tanks
AOC E.	Underground Storage Caverns
AOC G.	IF Oil/Water Separator Electrical Box

a. The objectives of the Unit Integrity Assessment is to determine whether each SWMU/AOC listed above has been adequately designed and has sufficient structural strength and compatibility with the waste(s) managed to ensure that it has not failed.

b. Unit Integrity Assessment Report Requirements:

(1) At a minimum this Assessment Report must include the following:

- The date of construction of each unit, if available (otherwise an estimate of the data of construction);

- Documented age of each unit, if available (otherwise, an estimate of the age);

- The repair and leakage history of each unit;

- Design standards used in the construction of each unit;

- Existing corrosion protection measures for each unit; and

- Results of all leak tests, internal inspections, or other integrity examination meeting the following requirements:

(a) For subgrade units, the assessment must include a leak test that is capable of taking into account the effects of temperature variations, end deflection, vapor pockets, and high water table effects, and;

(b) For other than subgrade units and for ancillary equipment, this assessment must include either a leak test, as described in paragraph (a) above, or other integrity examination, that is certified by an independent, qualified, registered professional engineer in accordance with § 270.11(d), that addresses cracks, leaks, corrosion, and erosion.

(2) The examination of each unit must be current, i.e., within 60 calendar days after the Phase III RFI Report approval.

(3) Upon receipt of the report, EPA and PADER will review the report and make comments and recommendations to the Permittee in writing.

(4) Within 30 calendar days thereafter, the Permittee is required to correct any discrepancies and/or follow any recommendation(s) noted by EPA and/or PADER.

2. If EPA determines that there is need for corrective measures based on the results of the assessment required above, EPA shall advise the Permittee in writing of this determination and the reasons therefore. The Permittee shall repair or replace these units found to be leaking, deteriorated or otherwise incapable of preventing the release of hazardous waste or constituents to the environment within 90 calendar days of notification of such determination. The corrective measures shall meet, at minimum, the following:

a. Units found to have leaked or be leaking shall not be utilized to manage hazardous waste until such units have been repaired or replaced.

b. All required repair/replacement shall be completed according to an approved schedule agreed upon by EPA and the Permittee.

c. All repairs/replacement shall be certified in accordance with 40 C.F.R. §270.11(d).

d. The Permittee shall determine the need for further clean up by testing any soils impacted by any units replaced under this section.

e. The certification(s) of repair/replacement as well as results from any soil testing shall be provided within 30 days of completion of the repair/replacement work.

3. If the Permittee believes that certain requirements in Section C. are not appropriate, the specific requirement shall be identified and the rational for inappropriateness shall be provided for in the required assessment report.

D. VERIFICATION INVESTIGATION

The minimum objectives and requirements of the Verification Investigation are:

a. Identify releases or suspected releases of hazardous waste and/or hazardous constituents into soil, which needs further investigation to determine whether corrective measures are necessary to protect human health and the environment and/or the implementation of Interim Measures at the Facility;

b. Screen from further investigation those SWMUs which do not pose a threat to human health or the environment.

1. Verification Investigation Plan Minimum Objectives

Within 180 calendar days after receipt of the Regional Administrator's approval of the Phase III RFI Report, the Permittee shall submit to the Regional Administrator and PADER a Verification Investigation Plan. The plan must be approved by the Regional Administrator in accordance with permit condition I.C. (Approval/Disapproval of Submissions) of this permit. The Verification Investigation Plan shall include each of the following SWMUs and AOCs and shall meet the following minimum objectives and requirements:

SWMU/AOC Number	SWMU/AOC Name
4.	Tank No. 4 Sludge Storage Tank
5.	Tank No. 5 Sludge Decant Tank
18.	Lime, Spent Clay, and Catalyst Loading System
19.	Sludge Receiving Trough
21.	Filter Cake Knockout Area
28.	Phillips Island Maintenance Storage Area
29.	Phillips Island Roll-Off Storage Area
30.	Phillips Island Old Drum Storage/Small Roll Off Area
31.	Fire Fighter Training Area
33.	Phillips Island Surface Drainage Ditches
34.	Phillips Island Sand Blasting Area
40.	10-4 Plant Roll-Off Storage Area
51.	Dock No. 2 Recovery Well System

57.	Clay Contact Plant Area
62.	Heat Exchanger Bundle Cleaning Area
63.	1A Oil Water/Separator
64.	1B Oil Water/Separator
67.	1E Oil Water/Separator
65.	1C Oil Water/Separator
66.	1D Oil Water/Separator
69.	IF Oil/Water/Separator Feed Trench
70-79.	9 and 14 Oil/Water Separators
81,82.	10 Oil/Water Separators
84-86.	16 Oil Water Separators
98.	Aboveground Tank Containment Areas
99.	Rail Car Loading/unloading Areas and Associated Tracks
AOC A.	Refinery Spill Area
AOC F.	8-C Plant PCB Transformer Area

2. Verification Investigation Plan Requirements

a. Verification Sampling Plan shall include the following:

(1) Analysis - Provide for the analyses for hazardous constituents identified in Attachment A. Also, any hazardous constituent not listed in Attachment A that is known or suspected to have been treated, stored, disposed or contained in the SWMU shall also be included for analysis.

(2) Background - The Permittee shall identify current and historical site information which may affect the proposed sampling and data collection effort;

(3) Maps - The Permittee shall include all pertinent locations on maps and shall locate all sampling points;

(4) Rationale for sample locations, number and type of samples. The Permittee shall:

(i) Identify the specific sampling points for each SWMU for each potentially affected environmental media; and

(ii) Provide the rationale and selection process utilized for the selection of final sampling points;

(5) A Quality Assurance Plan and a Sample Collection Methods and Procedures Plan, which conform to the analytical requirements set forth in Attachment B. The Permittee shall also furnish to the Regional

(2) The Permittee shall submit a Phase I Stabilization Workplan for SWMU No. 96 within 90 calendar days after the effective date of the Permit. The Phase I Stabilization Workplan shall include, but is not limited to, a description of the action proposed to limit or minimize the further spread of contamination, a schedule for implementing those actions, and a monitoring program for measuring and reporting on the effectiveness of the stabilization measures. Upon receipt of the Phase I Stabilization Workplan, the Regional Administrator shall either approve or disapprove the Workplan in writing. If the Regional Administrator approves the Phase I Stabilization Workplan, the Permittee shall begin to implement the Workplan within 45 calendar days after such notification.

(3) If the Regional Administrator disapproves the Phase I Stabilization Workplan, the Regional Administrator shall notify the Permittee in writing of the Workplan's deficiencies. If the Permittee agrees that the items noted by the Regional Administrator constitute deficiencies, the Permittee shall revise the Workplan accordingly and submit the revised version for review and approval within 45 days after receipt of the Regional Administrator's written notes of deficiencies. If the Permittee disagrees with some or all of the deficiencies noted by the Regional Administrator, the Permittee shall so advise the Regional Administrator in writing within 45 days after receipt of the Administrators written notice of deficiencies and the disagreement shall be resolved through use of the dispute resolution provisions of Section I.E of the Permit.

(4) If at any time, the monitoring program indicates that the Phase I stabilization program for SWMU No. 96 is not effectively limiting or minimizing the further spread of contamination, the Permittee must notify the Regional Administrator, in writing, no later than fifteen (15) calendar days after such a determination is made. The Regional Administrator may then, at his discretion, require that the Phase I stabilization program be revised to make it more effective in limiting or minimizing the spread of contamination, or require that final corrective action measures be implemented to remediate the contaminated media.

b. Phase II Stabilization Workplan

(1) If the Phase I RFI Report, as approved by the Regional Administrator, includes a recommendation for perimeter groundwater controls then, within 90 calendar days after receipt of the Regional Administrator's approval of the

Phase I RFI Report, the Permittee shall submit to the Regional Administrator and PADER, a Phase II Stabilization Workplan for perimeter groundwater controls. Any such Phase II stabilization Workplan shall include, but not be limited to, a description of the actions proposed to limit or minimize the further spread of contamination, a schedule for implementing those actions, and monitoring program for measuring and reporting the effectiveness of the stabilization measures. Upon receipt of the Phase II Stabilization Workplan, the Regional Administrator shall either approve or disapprove the Workplan, in writing. If the Regional Administrator approves the Workplan, the Permittee shall begin to implement the Workplan within 45 calendar days after such notification.

(2) If the Regional Administrator disapproves the Phase II Stabilization Workplan, the Regional Administrator shall notify the Permittee in writing, of the Workplan's deficiencies. If the Permittee agrees that the items noted by the Regional Administrator constitute deficiencies, the Permittee shall revise the Workplan accordingly and submit the revised Workplan for review and approval within 45 calendar days after the receipt of the Regional Administrator's written notice of deficiencies. If the Permittee disagrees with some or all of the deficiencies noted by the Regional Administrator, the Permittee shall so advise the Regional Administrator in writing within 45 days after the receipt of the Administrator's written notice of deficiencies. The disagreement shall be resolved through use of the dispute resolution provisions of Section I.E of the Permit.

(3) If at any time, the monitoring program indicates that the Phase II stabilization program is not effectively limiting or minimizing the further spread of contamination, the Permittee must notify the Regional Administrator in writing no later than fifteen days after such a determination is made. The Regional Administrator may then, at his discretion, require that the Phase II stabilization program be revised to make it more effective in limiting or minimizing the spread of contamination, or that final corrective action measures be implemented to remediate the contaminated media.

c. Phase III Stabilization Measures Workplan

(1) If the Phase II or Phase III RFI report as, approved by the Regional Administrator includes recommendations for interim stabilization measures with respect to any SWMU, then, within 90 calendar days after receipt of the Regional Administrator's approval of said Report, the Permittee shall submit to the Regional Administrator and

PADER, a Phase III Stabilization Workplan for any such SWMU(s). Any such Phase III Stabilization Workplan shall include, but not be limited to, a description of the actions proposed to limit or minimize the further spread of contamination, a schedule for implementing those actions, and a monitoring program for measuring and reporting on the effectiveness of the stabilization measures. Upon receipt of the Phase III Stabilization Workplan, the Regional Administrator shall either approve or disapprove the Phase III Stabilization Workplan in writing. If the Regional Administrator approves the Workplan, the Permittee shall begin to implement the Workplan within 45 calendar days after such notification.

(2) If the Regional Administrator disapproves the Phase III Stabilzation Workplan, the Regional Administrator shall notify the Permittee in writing, of the Workplan's deficiencies. If the Permittee agrees that the items noted by the Regional Administrator constitutes deficiencies, the Permittee shall revise the Workplan accordingly and submit the revised Workplan for review and approval within 45 calendar days after receipt of the Regional Administrator's written notice of deficiencies. If the Permittee disagrees with some or all of the deficiencies noted by the Regional Administrator, the Permittee shall so advise the Regional Administrator in writing within 45 calendar days after receipt of the Administrator's written notice of deficiencies. The disagreement shall be resolved through use of the dispute resolution provisions of Section I.E. of the Permit.

(3) If at any time, the monitoring program indicates that the Phase III stabilization program is not effectively limiting or minimizing the further spread of contamination, the Permittee must notify the Regional Administrator in writing no later than fifteen (15) days after such a determination is made. The Regional Administrator may then, at his discretion, require that the Phase III stabilization program be revised to make it more effective in limiting or minimizing the spread of contamination, or that final corrective action measures be implemented to remediate the contaminated media.

d. General Interim Measures

If, at any time during the term of this permit, the Permittee discovers a release of hazardous waste or hazardous constituents at or from the Facility which is adversely affecting or may adversely affect human health or the environment, and such release:

(1) Is not being addressed by corrective measures at the time of such discovery;

(2) Does not constitute an emergency under permit condition II.F.1.; and

(3) Is not subject to the Contingency Plan and Emergency Procedures as defined in the State-issued portion of this permit, the Permittee shall:

(a) Submit to EPA, in writing, the following information concerning the release within the specified time:

(i) The nature, source, extent, amount and location, to the extent known, within three (3) calendars days of discovery;

(ii) The concentration of each hazardous waste or hazardous constituent and, if known, the background level of each such hazardous waste or hazardous constituent within seven (7) calendar days of discovery;

(iii) The known or expected pathway through which the contamination is migrating or may migrate; the extent, rate, direction of contamination; and estimated quantities and/or volumes released within thirty (30) calendar days of discovery; and

(iv) The projected fate and transport, to the extent known, within thirty (30) calendar days of discovery.

(b) Without doing either a risk assessment or an endangerment assessment, and with respect to potential human exposure, identify the following within thirty (30) calendar days of discovery:

(i) The exposure pathway(s) (e.g., air, fire/explosion, groundwater, surface water, contact, ingestion);

(ii) The location and demographics of populations potentially at risk from exposure;

(iii) The potential short-term and long-term effects of human exposure;

(iv) Whether and how human exposure has actually occurred or when and how human exposure may occur; and

(v) The possible consequence(s) of delaying response to such release.

(c) Identify potential environmental exposure and threats such as those listed below within thirty (30) calendar days of discovery:

(i) The media which have been and may be contaminated (e.g., groundwater, air, surface water, soil);

(ii) The likely short-term and long-term threats and effects on the environment; and

(iii) If response is delayed, how the situation will change; and

(d) Submit an outline of proposed interim measures which will temporarily or permanently arrest the release, and which are expected to be a necessary component of the corrective measures, within thirty (30) calendar days of discovery.

(4) If the Regional Administrator determines, on the basis of information submitted by the Permittee pursuant to permit condition II.F.2., or any other information, that corrective action is necessary to protect human health or the environment from a release of hazardous waste or hazardous constituent from a SWMU, the Permittee may be required to implement interim measures. Such interim measures will be included in this permit pursuant to 40 C.F.R. § 270.41 or 270.42.

3. Release Reporting

If, at any time during the term of this permit, the Permittee discovers a release of hazardous waste or hazardous constituent at or from the Facility which:

a. Is not being addressed by corrective measures at the time of such discovery;

b. Does not constitute an emergency under permit condition II.F.1.; or

c. Is not subject to the Contingency Plan and Emergency Procedures as set forth in the portion of the RCRA permit issued by PADER,

The Permittee shall notify EPA, in writing, of the nature, source, extent, location and approximate amount of such

release within seven (7) calendar days of discovery of such release.

4. Based on the information submitted in permit condition II.E.2., the Regional Administrator may require the SWMU to be included in an ongoing Verification Investigation or RCRA Facility Investigation or may require a separate Verification Investigation or RCRA Facility Investigation for the SWMU.

5. Nothing in this permit shall limit EPA's authority to undertake or require any person to undertake response action(s) or corrective action under any law, including but not limited to, Sections 104 or 106 of CERCLA, 42 U.S.C. §§ 9604 or 9606, and Section 7003 of RCRA, 42 U.S.C. § 6973. Nothing in this permit shall relieve the Permittee of any obligation it may have under any law including, but not limited to, Section 103 of CERCLA, to report releases of hazardous waste, hazardous constituents or hazardous substances to at or from the Facility.

G. GUIDANCE DOCUMENTS

In addition to guidance documents specified elsewhere in this permit or Attachments, the following documents shall be referred to as appropriate:

1. U.S. EPA, May 1978 (Rev. May 1986), NEIC Policies and Procedures, Office of Enforcement and Compliance Monitoring, National Enforcement Investigations Center. EPA-330/9-78-001-R, Denver, Colorado, 80225;

2. U.S. EPA, March 1987, Data Quality Objectives for Remedial Response Activities, Volume 1: Development Process, Volume 2: Example Scenario, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement. EPA 540/6-87/003a, OSWER Directive No. 9335.0-7B;

3. U.S. EPA, September 1986, RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, Office of Waste Programs Enforcement and Office of Solid Waste and Emergency Response, OSWER Directive No. 9950.1;

4. U.S. EPA, October 1986, RCRA Facility Assessment Guidance, Office of Solid Waste, OSWER Directive No. 9502.00-5;

5. U.S. EPA, May 1989, Interim Final RCRA Facility Investigation (RFI) Guidance, Volumes I - IV, Office of Solid Waste, OSWER Directive No. 9502.006D;

6. U.S. EPA, June 1988, Interim Final RCRA Corrective Interim Measures Guidance, Office of Solid Waste, EPA/530-SW-88-029, OSWER Directive No. 9902.4; and

7. Any future EPA guidance regarding Corrective Measure Studies, Design or Implementation.

H. SOLID WASTE MANAGEMENT UNIT ASSESSMENT

1. The Permittee shall notify the Regional Administrator in writing of the discovery of any SWMU at the Facility, after the date of issuance of this permit, no later than thirty (30) calendar days after the date of discovery. The notification shall include, but not be limited to, the following known information:

   a. A description of the SWMU's type, function, dates of operation, location (including a map), design criteria, dimensions, materials of construction, capacity, ancillary systems (e.g., piping), release controls, alterations made to the unit, engineering drawings, and all closure and post-closure information available, particularly whether wastes were left in place;

   b. A description of the composition and quantities of solid wastes processed by the units with emphasis on hazardous wastes and hazardous constituents; and

   c. A description of any release (or suspected release) of hazardous waste or hazardous constituents originating from the unit. Include information on the date of release, type of hazardous waste or hazardous constituents, quantity released, nature of the release, extent of release migration, and cause of release (e.g., overflow, broken pipe, tank leak, etc.). Also provide any available data which would quantify the nature and extent of environmental contamination, including the results of soil and/or groundwater sampling and analysis efforts. Likewise, submit any existing monitoring information that indicates releases of hazardous waste or hazardous constituents have not occurred or are not occurring. The Permittee may refer to information regarding releases previously submitted to EPA under permit condition II.F., Emergency Response, Interim Measures, Release Reporting.

2. Upon receipt of the notification of any newly-identified SWMU, the Regional Administrator will determine the need for corrective action at such SWMU. If corrective action is necessary to protect human health or the environment, the Regional Administrator will determine whether a Verification Investigation or RCRA Facility Investigation will be performed and the need for and scope of any Interim Measures.

3. Within sixty (60) calendar days after receipt of the Regional Administrator's determination that a Verification Investigation or RCRA Facility Investigation is necessary, the

Permittee shall submit a Verification Investigation Plan or RCRA Facility Investigation Plan meeting the requirements of permit conditions II.B. and II.D. and Attachment C. The Regional Administrator's determination shall either specify the media and/or parameters to be investigated or shall require the Permittee to propose and justify the selection of media and/or parameters.

4. Within the time specified in the approved Verification Investigation or RCRA Facility Investigation Plan, which shall not be less than ninety (90) calendar days after receipt of the Regional Administrator's approval of the Plan, the Permittee shall submit the Verification Investigation or RCRA Facility Investigation Report fulfilling the requirements of permit conditions II.B., II.D., and Attachment C.

5. In lieu of a Verification Investigation, the Permittee may propose either to incorporate any newly-identified SWMU into an ongoing RCRA Facility Investigation or to submit a proposal for the performance of corrective measures at such newly-identified SWMU in accordance with the provisions of permit condition II.A. Any such proposal shall be submitted to the Regional Administrator along with notification of the discovery of the SWMUs.

I. RECORD KEEPING

Solid waste management units.

Upon completion of closure of any SWMU, the Permittee shall maintain a record of the closure measures taken in the Facility operating record.

J. ACCESS FOR CORRECTIVE ACTION OVERSIGHT

EPA and its authorized representatives shall have access to the Facility at all reasonable times for the purpose of monitoring compliance with the provisions of this permit. The Permittee shall use its best efforts to obtain access to property beyond the boundaries of the Facility at which corrective action is required by this permit (see Section 3004(v) of RCRA, 42 U.S.C. § 6924(v)): (1) for itself and any contractor of the Permittee for the purpose of taking corrective action required by this permit and (2) for EPA and its authorized representatives for the purposes described in this paragraph.

Date Signed

Bruce P. Smith,
Associate Division Director
for RCRA Programs

Attachment A

Hazardous Constituent List

Aniline
Anthracene
Antimony
Arsenic
Barium
Benz(a)anthracene
Benzene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Bis(2-ethylhexyl)phthalate
Butyl Benzyl Phthalate
Cadmium
Carbon disulfide
Chlorobenzene
Chloroform
2-Chlorophenol
Chromium (Hexavalent)
Chromium (Trivalent)
Chromium (Total)
Chrysene
m-Cresol
o-Cresol
p-Cresol
Cyanide (Complex)
Cyanide (Salts)
Dibenz(a,h)anthracene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichloropropane
Diethylphthalate
7,12-Dimethylbenz(a)anthracene
2,4-Dimethylphenol
Dimethyl Phthalate
4,6-Dinitro-o-cresol
2,4-Dinitrophenol
2,4-Dinitrotoluene
1,4-Dioxane
Di-n-butyl Phthalate
Di-n-octyl Phthalate
Ethylbenzene
Ethylene Dibromide
Fluoranthrene
Indeno(1,2,3-cd)pyrene
Lead
Mercury
Methyl ethyl ketone
Naphthalene
Nickel

Nitrobenzene
4-Nitrophenol
Phenanthrene
Phenols
Pyrene
Pyridine
Selenium
Silver
Styrene
Tetrachloroethylene
Toluene
Trans-1,2-Dichloroethane
1,1,1-Trichloroethane
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
Xylenes (total)

ATTACHMENT B

Quality Assurance Plan and Sample Collection Methods and Procedures plan

The Permittee shall submit Sample Collection Methods and Procedures Plan(s), Quality Assurance Project Plan(s), and Laboratory Data Package(s) as specified in this Attachment.

1. Sample Collection Methods and Procedures Plan - The Permittee shall:

   a. Describe the samplers or sampling equipment for each environmental media and/or waste matrix to be sampled at each SWMU or AOC;

   b. Describe the sampling procedure for each environmental media and/or waste matrix in explicit detail. The description shall include, but not be limited to, procedures and methods for work such as bailing, drilling holes, etc.:

      (1) Describe the sequence to be followed in conducting the field activities;

      (2) Include the following quality assurance samples for analysis at the rate specified:

         (a) Equipment Blank - One with each sampling event for each matrix type;

         (b) Trip Blank - One with each analytical volatile batch for each matrix type;

         (c) Field Blank - One with each analytical batch or every 20 samples, whichever is greater; and

         (d) Replicates (see Figure 1) - One with each analytical batch or every 20 samples, whichever is greater;

      (3) Identify the type and source of the sample containers to be used for each analytical parameter;

      (4) Detail the sample preservation methods to be utilized and state the maximum permissible holding times allowed for each analytical parameter prior to analysis;

      (5) Describe the sample custody procedures starting with the cleaning of sample containers to be

used, and provide an example "chain-of-custody" form;

(6) Detail the sampling equipment decontamination procedures to be utilized; and

(7) Describe what will be done with disposable equipment contaminated on-site and how contaminated materials will be disposed of, including contaminated environmental media.

c. Identify the analytical laboratory, which has a documented Quality Assurance Program, to be used;

d. Identify in the Quality Assurance Project Plan all analytical methods to be used.

(1) Analytical methods utilized must be capable of achieving the practical quantification limits (PQLs) or health based standards contained in Attachment E, whichever is lower, and the data quality requirements specified in the approved method. The need for deviation from any of these criteria must be fully documented in the Quality Assurance Project Plan and submitted to EPA for approval. EPA will review this documentation and decide whether to approve any change.

(2) Test methods for analysis of hazardous constituents have been standardized by EPA in its publication, Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods (SW-846), 3rd Edition, as updated. Suggested methods are included in Attachment E. Any other appropriate standardized method may be used by the Permittee, provided that the alternate method is capable of producing the required level of data quality and as long as the method adheres to the quality assurance requirements in this Attachment. Non-standardized methods may be used with prior EPA approval provided that the Permittee submits a comprehensive description of the test method along with data from tests designed to evaluate equivalency with standard methods. This data shall include a statistical analysis of the equivalency test data.

e. Use, at a minimum, the quality control procedures found in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW 846), 3rd Edition, as updated.

2. Quality Assurance Project Plan - The Quality Assurance Project Plan shall fulfill the following minimum requirements:

   a. The Permittee shall have a Quality Assurance program for ensuring that all information, data and decisions resulting from any Verification Investigation, RCRA Facility Investigation, and/or Corrective Measure Study are technically sound and properly documented.

   b. The Permittee shall use an analytical laboratory which has a documented Quality Assurance Program.

   c. The Permittee shall prepare a Quality Assurance Project Plan for each data collection project or continuing activity utilizing guidelines and specifications found in EPA's "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (QAMS-005/80). The Plan shall address the 16 plan elements discussed in "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (QAMS-005/80), which are as follows:

      (1) Title page, introduction;

      (2) Table of contents;

      (3) Project description;

      (4) Project organization;

      (5) Quality assurance objectives for data measurement;

      (6) Sampling procedure;

      (7) Sample and document custody procedures;

      (8) Calibration procedures and frequency;

      (9) Analytical procedures;

      (10) Data reduction, validation and reporting;

      (11) Internal quality control checks;

      (12) Performance and system audits;

      (13) Preventive maintenance;

      (14) Data measurement assessment procedures;

(15) Corrective Action; and

(16) Quality assurance reports to management.

3. Laboratory Data Package - The Permittee shall ensure that the laboratory(ies) analyzing samples required by this Permit shall use the methods identified in the EPA approved Quality Assurance Project Plan submitted in accordance with Paragraph 2.c., above, and submit the required deliverables. A laboratory data package shall include:

a. A Quality Control Summary including:

(1) Methods Summary;

(2) Surrogate Recoveries;

(3) Matrix Spike/Matrix Spike Duplicate Recoveries;

(4) Method/Trip/Field/Blank Results;

(5) Storage; and

(6) Standards Data including sources.

b. A Sample Data Section including:

(1) Specific Compound Results;

(2) Results of Tentatively Identified Compound Analysis;

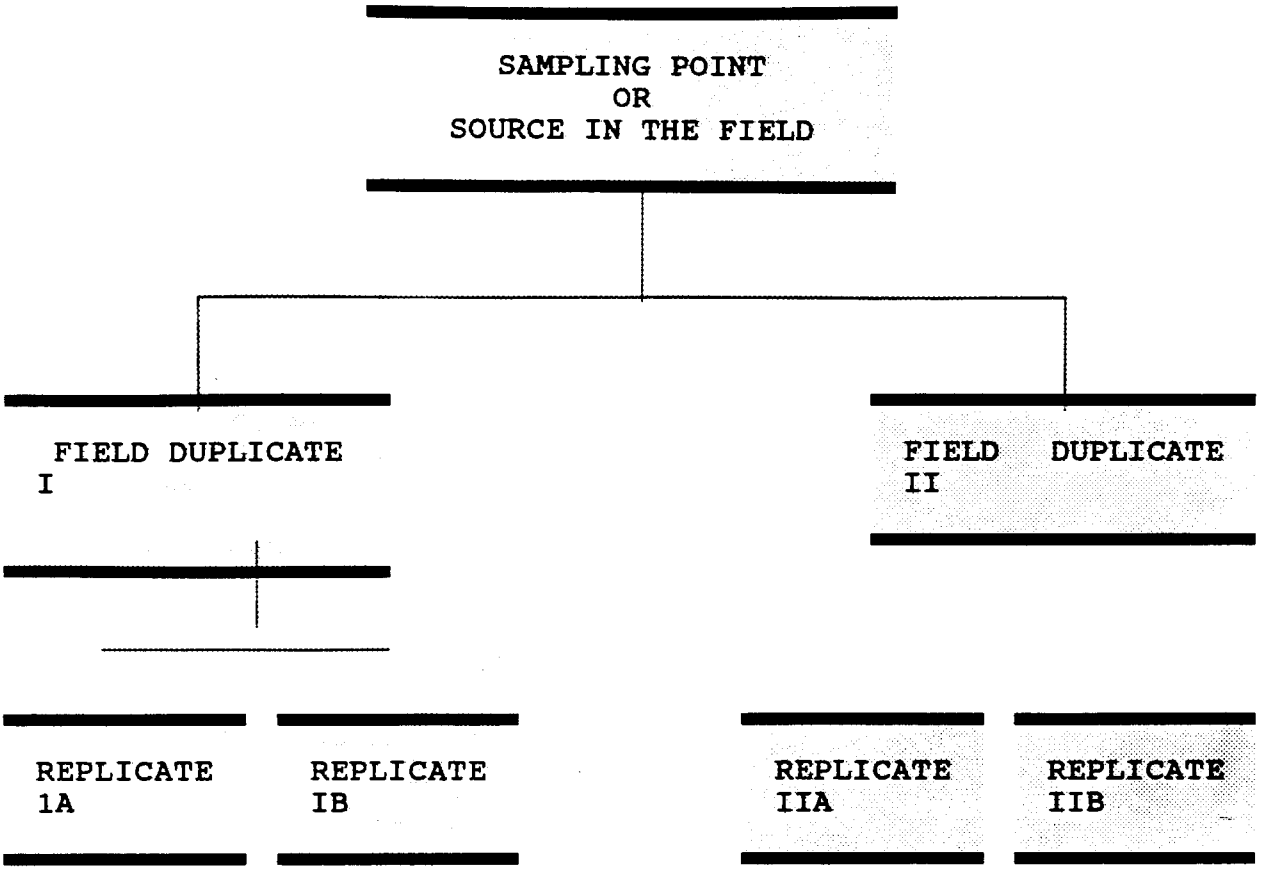
(3) Detection Limits;

(4) Sample Analysis Dates; and

c. The Permittee shall provide data validation of analyses done by the laboratory(ies) (to be described in the Quality Assurance Project Plan). This data validation shall determine data acceptability and shall be performed in accordance with EPA's Functional Guidelines for Data Review for data derived by Contract Laboratory Procedure Methods (Laboratory Data Validation - Functional Guidelines for Evaluating Organic Analyses, Hazardous Site Evaluation Division, US EPA, February 1, 1988 and Laboratory Data Validation - Functional Guidelines for Evaluating Inorganic Analyses, Hazardous Site Evaluation Division, US EPA, June 13, 1988). If another method is used, the data validation shall be performed in accordance with the QA/QC data validation criteria set forth in that method. For methods lacking QA/QC data validation protocols, the Permittee must

establish validation criteria such as those in Section 8 of the EPA Series Methods in 40 CFR Part 136. The appropriate quality assurance data validation summary reports shall be submitted to EPA, along with sample data and summary sheets and final sample results.

The Permittee shall ensure that EPA personnel and/or EPA authorized representatives are allowed reasonable access to the laboratory(ies), records and personnel utilized by the Permittee for analysis of samples collected pursuant to this permit.



Duplicates are collected in the field
Replicates are analyzed in the laboratory

Figure 1

ATTACHMENT C

RCRA FACILITY INVESTIGATION

1. RCRA Facility Investigation Plan requirements:

A. General Description of Current Conditions Section

The Permittee shall provide a description of current conditions at each SWMU[/AOC] identified in permit condition II.B. or identified in the Regional Administrator's approval of a Verification Investigation Report submitted pursuant to permit condition II.D. Information previously submitted in a Verification Investigation Report need only be referenced.

Such description shall include a topographic map(s) consistent with the requirements set forth in 40 C.F.R. § 270.14(b)(19) and of sufficient detail and accuracy to locate and report all current and future work performed at the site. Such map(s) shall depict the following:

(1) General geographic location;

(2) Property lines, with the owners of all adjacent property clearly indicated;

(3) The location of all known past solid or hazardous waste treatment, storage, or disposal areas and the site of all known spills, fires or other accidental or intentional release locations, including the approximate locations of any groundwater contamination plumes presently identified;

(4) All known past and presently operating product and hazardous or solid waste underground tanks or piping; and

(5) The location of all production and groundwater monitoring wells, whether or not they are associated with the particular SWMU under investigation. These wells shall be clearly labeled. Ground, top of casing and screened-interval elevations shall also be provided.

B. Potential Corrective Measure Technologies Section

Based on existing information, the Permittee shall identify:

(1) The potential corrective measure technologies that may be used at the Facility or beyond the boundaries of the Facility to respond to releases of hazardous waste or hazardous constituents at or from the Facility; and

(2) Any field, laboratory, bench-scale or pilot-scale data that

needs to be collected in the RFI to facilitate the evaluation and selection of the final corrective measure(s), if any, for releases at or from the Facility (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.).

C. Project Management Plan Section

The Permittee shall submit a Project Management Plan which shall include a discussion of the technical strategy, schedules, budget, and personnel that will be used for the study. The plan shall also include a description of the qualifications of personnel performing or directing the RFI, including contractor personnel, and document the overall management approach to the RFI.

D. Community Relations Plan Section

(1) The Permittee shall prepare a fact sheet describing the scope and objectives of the RCRA Facility Investigation.

This fact sheet shall be mailed by the Permittee to all persons on the Facility mailing list to be supplied by the Regional Administrator (40 C.F.R. § 124.10(c)(1)(ix)) and to the appropriate units of State and local governments at least ten (10) business days prior to start of the field activities.

(2) A summary of the RCRA Facility Investigation (RFI) Report shall be included with the RFI Report (permit condition II.B.). Within ten (10) business days of receipt of the Regional Administrator's approval of the RFI Report, the summary report shall be mailed to all individuals on the facility mailing list compiled under 40 C.F.R. § 124.10(c)(1)(ix).

(3) Notification of groundwater contamination. If at any time the Permittee discovers that hazardous constituents, which may have been released from a SWMU or AOC at the Facility, in groundwater have migrated beyond the Facility boundary in concentrations that exceed health-based[1] levels, the

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[1]The health-based level for such hazardous waste or hazardous constituents as derived in a manner consistent with EPA guidelines set forth in 51 Federal Register 33992, 34006, 34014, 34028. The health-based level for carcinogens represents a concentration associated with an excess upper bound lifetime risk of 1×10^{-6} due to continuous constant lifetime exposure, and for systemic toxicants represents a concentration to which the human population, exposed to on a daily basis, is not likely to suffer an appreciable

Permittee shall, within fifteen (15) calendar days of such discovery, provide written notice to the Regional Administrator and any person who owns or resides on the land which overlies the contaminated groundwater.

(4) Notification of air contamination. If at any time the Permittee discovers that hazardous constituents, which may have been released from a SWMU or AOC at the Facility, in air have migrated or are migrating to areas beyond the Facility boundary in concentrations that exceed health-based levels, and that residences or other places at which continuous, long-term exposure to such constituents might occur are located within such areas, the Permittee shall, within fifteen (15) calendar days of such discovery:

(a) Provide written notification to the Regional Administrator; and

(b) Provide notice to all individuals who have or may have been subject to such exposure.

E. Schedule

The Permittee shall provide a schedule for performance of the tasks in the RFI Plan.

2. RCRA Facility Investigations

A. Environmental Setting Investigation

The Permittee shall collect information to supplement and verify existing information on the environmental setting at the Facility. The Permittee shall characterize the following:

(1) Geology and Hydrogeology

The Permittee shall conduct a program to evaluate the hydrogeologic conditions at the Facility. The program shall provide:

(a) A description of the regional and site-specific geologic units underlying the Facility, including:

(i) Stratigraphy: strike and dip, and identification of stratigraphic contacts;

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risk of deleterious effect during a lifetime. Any list prepared by EPA according to these procedures may be used. Such a list is contained in Chapter 8, RCRA Facility Investigation, Interim Final, May 1989. As these lists may be revised at any time based on new information, contact EPA for guidance.

(ii) Structural features: folding, fracturing, channeling, faulting, jointing; and

(iii) Soil: classification, description of appearance, and consistency;

(b) A description of regional and site-specific hydrogeologic characteristics, including:

(i) Regional and Facility specific groundwater flow patterns;

(ii) A characterization of seasonal variations in the groundwater flow regime, including any perched groundwater zones;

(iii) Identification and characterization of areas of recharge and discharge;

(iv) An analysis of any topographic or geomorphic features that might influence the groundwater flow system; and

(v) A description of the stratigraphic units including:

a) Hydraulic conductivity;

b) An interpretation of hydraulic interconnections between saturated zones, including any perched zones; and

c) Attenuation capacity and mechanisms of the soils (e.g., ion exchange capacity, organic carbon content, mineral content, etc.);

(c) Using a topographic map as a base, and at least two approximately perpendicular geologic cross-sections for each SWMU [AOC] and the surrounding area, provide a description of the extent (depth, thickness, lateral extent) of each geologic unit including:

(i) Generalized soil (based on testing, grain size, water content, Atterburg limits, etc.) and rock profiles;

(ii) Encountered features such as faults, fractures, voids, stratum changes, lenses, pinch out zones, etc.;

(iii) Location and type of sampling including blow counts, percent recovery, etc.;

(iv) Location and type of in-situ testing performed (pressuremeter, packer permeability testing, slug tests, pump tests, etc.); and

(v) Groundwater elevation and/or potentiometric elevation;

(d) A description of the Facility site flow system including:

(i) Water-level contour and/or potentiometric maps;

(ii) The vertical and horizontal components of flow;

(iii) Any temporal changes in water levels or hydraulic gradients, for example, due to tidal or seasonal influences;

(iv) Active and inactive local water supply and production wells with an approximate schedule of pumping; and

(v) Manmade hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention ponds, etc.).

(2) Soils

The Permittee shall conduct a program to evaluate the soil conditions at the Facility. The program shall provide the following information:

(a) Where remediation by removal of soils is the only corrective measure option, provide map(s) and perpendicular cross sections showing:

(i) The extent of contamination;

(ii) Depth to groundwater; and

(iii) The consistency and distribution of soils (using the Unified Soil Classification System (USCS) (ASTM D 2487));

(b) Where remediation by removal is the likely option but it is necessary to determine the extent of migration (for example, to assess the mobility of wastes from an unlined surface impoundment or landfill) provide the following in addition to the requirements immediately above:

(i) Depth to bedrock and the characteristics of the bedrock including discontinuities such as

faults, fissures, joints, fractures, sinkholes, etc.;

(ii) A detailed soil survey conducted according to USDA Soil Conservation Service (SCS) procedures including:

a) USDA Textural Soil Classification and soil profiles showing stratifications or zones which may affect or direct the subsurface flow;

b) Hydraulic conductivity and the SCS hydrologic group classification, A, B, C or D;

c) Relative permeability (only if the waste may have changed the soil's hydraulic conductivity, such as concentrated organics);

d) Storage capacity;

e) Shrink-swell potential (where extreme dry weather could lead to the formation of cracks);

f) Potential for contaminant transport via erosion, using the Universal Soil Loss Equation;

g) Soil sorptive capacity;

h) Cation exchange capacity;

i) Soil organic content; and

j) Soil pH;

(iii) The following contaminant characteristics must be included:

a) Physical state;

b) Viscosity;

c) pH;

d) pKa;

e) Density;

f) Water solubility;

g) Henry's Law Constant;

h) K_{ow};

i) Biodegradability; and

j) Rates of hydrolysis, photolysis and oxidation;

(c) When in-situ soil treatment will likely be the remediation, the following additional information must be provided:

(i) Bulk density;

(ii) Porosity;

(iii) Grain size distribution;

(iv) Mineral content;

(v) Soil moisture profile;

(vi) Unsaturated hydraulic conductivity;

(vii) Effect of stratification on unsaturated flow; and

(viii) Infiltration and evapotranspiration.

(3) Surface Water and Sediment

The Permittee shall conduct a program to characterize the surface water bodies in the vicinity of the Facility. Such characterization shall include, but not be limited to:

(a) Description of the temporal and permanent surface water bodies including:

(i) For lakes: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;

(ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;

(iii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, tidal and seasonal fluctuations, and

flooding tendencies (i.e., 100-year event);

(iv) Drainage patterns; and

(v) Evaporation rate;

(b) Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biochemical oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (ammonia, nitrate/nitrite nitrogen, phosphate), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.;

(c) Description of sediment characteristics including:

(i) Deposition area;

(ii) Thickness profile; and

(iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).

(4) Air

The Permittee shall provide information characterizing the climate in the vicinity of the Facility. Such information shall include, but not be limited to:

(a) A description of the following parameters: Annual and monthly rainfall averages; monthly temperature averages and extremes; wind speed and direction; relative humidity/dew point; atmospheric pressure; evaporation data; development of inversions; and climate extremes that have been known to occur in the vicinity of the Facility, including frequency of occurrence.

(b) A description of topographic and manmade features which affect air flow and emission patterns, including: ridges, hills, or mountain areas; canyons or valleys; surface water bodies (e.g., rivers, lakes, bays, etc.); wind breaks and forests; and buildings.

B. Source Characterization Investigation

The Permittee shall collect analytical data to supplement and update any description prepared pursuant to the Verification Investigation of the SWMUs subject of a RFI. The data shall completely characterize the wastes and the areas where wastes

have been placed, including: type; quantity; physical form; disposition (containment or nature of deposits); and Facility characteristics affecting release (e.g., Facility security, and engineered barriers). This shall include quantification of the following specific characteristics at each source area:

(1) Unit/Disposal Area Characteristics:

(a) Location of unit/disposal area;

(b) Type of unit/disposal area;

(c) Design features;

(d) Operating practices (past and present);

(e) Period of operation;

(f) Age of unit/disposal area;

(g) General physical conditions; and

(h) Method used to close the unit/disposal area.

(2) Waste Characteristics:

(a) Type of waste placed in the unit, including but not limited to: Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing, or reducing agent); quantity; and chemical composition.

(b) Physical and chemical characteristics, including but not limited to: Physical form (solid, liquid, gas); physical description (e.g., powder, oily sludge); temperature; pH; general chemical class (e.g., acid, base, solvent); molecular weight; density; boiling point; viscosity; solubility in water; cohesiveness of the waste; and vapor pressure.

(c) Migration and dispersal characteristics of the waste, including but not limited to: sorption; biodegradability, biocentration, biotransformation; photodegradation rates; hydrolysis rates; and chemical transformations.

The Permittee shall document the procedures used in making the above characterizations.

C. Contamination Characterization Investigation

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas (as

identified in permit condition II.D. Verification Investigation Report) contamination in the vicinity of the Facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Permittee shall address the following types of contamination at the Facility:

(1) Groundwater Contamination

The Permittee shall conduct a groundwater investigation to characterize any plumes of contamination at the Facility. This investigation shall provide, at a minimum, the following information:

(a) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility;

(b) The horizontal and vertical direction of contamination movement;

(c) The velocity of contaminant movement;

(d) The horizontal and vertical concentration profiles of hazardous constituents in the plume(s);

(e) An evaluation of factors influencing the plume movement; and

(f) An extrapolation of future contaminant movement.

(g) Each RFI Plan shall include the locations, design and installation procedures for any additional groundwater monitoring wells required to complete the monitoring well network at each area as necessary to meet the RFI objectives. These wells may be used in conjunction with existing wells in the area. All information required of the new wells shall also be required of the existing wells. The monitoring well network shall meet the following requirements:

(i) The upgradient wells must be capable of yielding samples that are representative of background water quality in the uppermost aquifer and are not affected by any solid waste management unit. The number and location of the wells must be sufficient to characterize the spatial variability of background water;

(ii) The downgradient wells must be capable of immediately detecting any statistically significant amounts of hazardous waste or hazardous constituents that migrate from each solid waste management unit into the groundwater; and

(iii) The monitoring system shall be designed to operate for a period of long-term duration.

When developing this information, the Permittee shall refer to the Technical Enforcement Guidance Document (EPA, September, 1986) to determine methods and materials that are acceptable to EPA.

(h) Each RFI Plan shall provide a description of the groundwater monitoring wells including the following information:

(i) A description and map of well locations, including a survey of each well's surface reference point and the elevation of the top of its casing;

(ii) Size and depth of each well;

(iii) Description of well intake design, including screen slot size and length, filter pack materials and method of filter pack emplacement;

(iv) Type of well casing and screen materials. The choice of well materials shall be made in light of the parameters to be monitored and the nature of the leachate that could potentially migrate from the facility; The well materials shall: (1) minimize the potential of absorption of constituents from the samples; and (2) maintain their integrity for the life of the system.

(v) Description of methods used to seal the well from the surface and prevent downward migration of contaminants through the well annulus; and

(vi) Description of the methods and procedures used to develop the well.

(i) The Permittee shall select a sampling regime and conduct sampling and analysis activities capable of yielding representative samples. The sampling program

shall include, at a minimum, the following elements:

(1) A list of parameters capable of detecting releases of hazardous waste or hazardous constituents into groundwater. The parameters shall be representative of hazardous constituents at least as mobile as the most mobile hazardous constituent that may be present after considering:

a) The types, quantities, and concentrations of hazardous constituents in wastes managed at the SWMU [or AOC]. Incidental constituents which may be released into the unit area from process areas shall be included in this list of analyses;

b) The mobility, stability, and persistence of hazardous waste constituents or their reaction products in the unsaturated zone beneath the waste management area;

c) The detection ability of the indicator parameters, waste constituents of reactive products in groundwater;

d) The concentration of and the natural variation (known or suspected) of the proposed monitoring parameters in background media; and

e) The list must include the basis for selecting each proposed indicator parameter, including any analysis or calculations performed. The basis for selection shall, where possible, include chemical analysis of the unit's waste and/or leachate as appropriate. The list shall also include parameters to characterize the site-specific chemistry of groundwater at the site including, but not limited to, the major anions and cations that make up the bulk of dissolved solids in water (i.e., Cl^{-}, Fe^{+3}, Mn^{+2}, Na^{+}, $(SO_4)^{-2}$, Ca^{+2}, Mg^{+2}, K^{+}, NO^{-3}, PO^{-3}, silicate, and ammonium).

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures used to characterize contaminant plume(s), for example, geophysics, modeling, pump tests, slug tests, nested piezometers, etc.

(2) Soil Contamination

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The soil contamination investigation shall include:

(a) A description of the vertical and horizontal extent of contamination;

(b) A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, cation exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, and other factors that might affect contaminant migration and transformation;

(c) Specific contaminant concentrations;

(d) The velocity and direction of contaminant movement; and

(e) An extrapolation of future contaminant movement.

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures used in making the above characterizations and determinations of future contaminant movement.

(3) Surface Water and Sediment Contamination

The Permittee shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from contaminant releases at the Facility.

The investigation shall generate, at a minimum, the following information:

(a) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility, and the extent of contamination in underlying sediments;

(b) The horizontal and vertical direction of contaminant movement;

(c) The contaminant velocity;

(d) An evaluation of the physical, biological, and

chemical factors influencing contaminant movement;

(e) An extrapolation of future contaminant movement; and

(f) A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures used in making the above characterizations.

(4) Subsurface Gas Contamination

The Permittee shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste or hazardous constituents. This investigation shall generate, at a minimum the following information:

(a) A description of the horizontal and vertical extent of subsurface gases migration;

(b) The chemical composition of the gases being emitted;

(c) The rate, amount, and density of the gases being emitted; and

(d) Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Permittee shall document, in the RFI Report submitted pursuant to condition 3 of this Attachment, the procedures used in making the above characterizations.

(5) Air Contamination

The Permittee shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. This investigation shall generate, at a minimum, the following information:

(a) A description of the horizontal and vertical direction and velocity of contaminant movement;

(b) The rate and amount of the release; and

(c) The chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles.

The Permittee shall document, in the RFI Report submitted

pursuant to condition 3 of this Attachment, the procedures used in making the above characterizations.

D. Potential Receptors Investigation

The Permittee shall collect data describing the human populations and environmental systems that may be exposed to releases of hazardous waste or hazardous constituents from the Facility. Chemical analysis of biological samples may be required. Data on observable effects in ecosystems may also be required.

(1) The following characteristics shall be identified:

(a) Local uses and possible future uses of groundwater:

(i) Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and

(ii) Location of groundwater users, including wells and discharge areas;

(b) Local uses and possible future uses of surface waters draining the Facility:

(i) Domestic and municipal (e.g., potable and lawn/garden watering);

(ii) Recreational (e.g., swimming, fishing);

(iii) Agricultural;

(iv) Industrial; and

(v) Environmental (e.g., fish and wildlife propagation);

(c) Human use of or access to the Facility and adjacent lands, including, but not limited to:

(i) Recreation;

(ii) Hunting;

(iii) Residential;

(iv) Commercial;

(v) Zoning; and

(vi) Relationship between population locations and

prevailing wind direction;

(d) A description of the biota in surface water bodies on, adjacent to, or affected by the Facility;

(e) A description of the ecology overlying and adjacent to the Facility;

(f) A demographic profile of the people who use or have access to the Facility and adjacent land, including, but not limited to: age, sex, and sensitive subgroups; and

(g) A description of any endangered or threatened species near the Facility.

(h) Laboratory and Bench Scale Studies

If specifically required at any time during the RFI, the Permittee shall conduct laboratory and/or bench scale studies to determine the applicability of corrective measure technology or technologies to facility conditions. The Permittee shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

The Permittee shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Permittee shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Permittee shall prepare a report summarizing the testing program and its results, both positive and negative.

3. RCRA Facility Investigation Report

The RCRA Facility Investigation Report shall include an analysis and summary of all Facility investigations and the results of such investigations.

A. Data Analysis

The Permittee shall analyze all Facility investigation data outlined in permit condition II.B., RCRA Facility Investigation, and prepare a report on the type and extent of contamination at

the Facility, including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area.

B. Media Cleanup Standards

The Permittee shall identify the following cleanup standards:

(1) Groundwater Cleanup Standards

The Permittee shall provide information to support selection/development of Groundwater Cleanup Standards for all of the hazardous constituents found in the groundwater during the RCRA Facility Investigation.

(a) The Groundwater Cleanup Standards shall consist of:

(i) The Maximum Contaminant Level (MCL) for any constituents with an EPA promulgated Maximum Contaminant Level (MCL), if the background level of the constituent is below the value of the EPA approved MCL; or

(ii) The background level of that constituent in the groundwater; or

(iii) A standard established according to the criteria for Other Media Cleanup Standards.

(2) Other Media Cleanup Standards

The Permittee shall identify concentration levels in the affected media which protect human health and the environment.

Unless a lower concentration level is deemed necessary to protect environmental receptors, cleanup standards shall be established as follows:

(a) For any known or suspected carcinogens classified by EPA's weight of evidence classification as an A, B1 or B2 carcinogen, cleanup standards shall be established at concentration levels which represent an excess upperbound lifetime risk to an individual of 1×10^{-6}, or

(b) For systemic toxicants, cleanup standards shall represent concentration levels to which the human population (including sensitive subgroups) could be exposed on a daily basis without appreciable risk of deleterious effect during a lifetime.

c. The Permittee shall recommend which SWMUs, or groups of SWMUs [or AOCs] require a Corrective Measures Study (Attachment D). The Permittee shall also identify those corrective action alternative(s) the Permittee intends to investigate further. The Permittee may either investigate several alternatives or focus on a limited number of alternatives. A schedule for the expeditious completion of the Corrective Measures Study shall be included.

ATTACHMENT D
CORRECTIVE MEASURES STUDY

The purpose of a Corrective Measures Study (CMS) is to develop and evaluate remedial alternative(s) and to recommend the remedy(ies) to be taken. The Permittee may elect either to screen a number of potential remedies prior to evaluating a smaller number of potential remedies or delete the screening step and proceed with evaluation of the expected remedy(ies), including any specified by EPA.

The CMS shall consist of:

1. SCREENING OF POTENTIAL REMEDIES:

Should the Permittee elect to screen a number of potential remedies, any potential remedy specified in EPA's approval of the RFI Report shall also be screened.

A. Characteristics for Screening

The characteristics which shall be used to screen inapplicable remedies or technologies include, but are not limited to:

(1) Site and Media Characteristics:

Site and media data shall be reviewed to identify conditions that may limit or promote the use of certain technologies. The use of technologies which are clearly precluded by site or media characteristics shall be eliminated from further consideration. The Permittee shall document the reasons for eliminating any technology;

(2) Waste Characteristics:

Potential remedies clearly limited by the waste characteristics should be eliminated from consideration. The Permittee shall document the reasons for eliminating any technology; and

(3) Technology Limitations:

During the screening process, the level of technological development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. The Permittee shall document the reasons for eliminating any

technology.

B. Remedy(ies) Selection

The Permittee shall select remedy(ies) based on the above screening, together with any remedy(ies) specified by EPA, for further evaluation. Should an EPA-specified potential remedy(ies) prove infeasible based on the above screening, the Permittee may request that the alternative(s) be dropped from further investigation. However, until approved, the request shall not stay the conditions of this permit.

2. EVALUATION OF POTENTIAL REMEDIES

The Permittee shall evaluate the selected potential remedy(ies), including any specified by EPA.

The evaluation shall include a description of each potential remedy measure alternative. Each such description shall include, but shall not be limited to: Preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required.

Each potential remedy shall be evaluated with respect to the following criteria:

A. Technical

(1) Evaluation of the performance, reliability, ease of implementation, and potential impacts of the remedy, including safety impacts, cross media impacts, and control of exposure to any residual contamination;

(2) Assessment of the effectiveness of potential remedies in achieving adequate control of source and cleanup of the hazardous waste (including hazardous constituents) released from solid waste management units;

(3) Assessment of the time required to begin and complete the remedy;

(4) Estimation of the costs of remedy implementation; and

(5) Assessment of institutional requirements, such as state or local permit requirements, or other environmental or public health requirements which may substantially affect implementation of the remedy(ies).

B. Environmental

An evaluation of the Facility conditions and pathways of contamination actually addressed by each potential remedy. The evaluation shall include the short-term and long-term beneficial and adverse effects, any adverse effects on environmentally sensitive areas, and an analysis of measures to mitigate such adverse effects.

C. Human Health

The potential remedy(ies) shall be evaluated with respect to mitigation of short- and long-term potential exposure to any residual contamination and protection of human health, both during and after implementation.

D. Institutional

The Permittee shall evaluate the effects of federal, State, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations, including the requirements for construction and operating permits on the design, operation, and timing of the remedy(ies).

3. COST ESTIMATE

The Permittee shall develop a cost estimate for the remedy(ies) and for each phase or segment of the remedy(ies) including:

a. Capital costs consisting of direct (construction) and indirect (non-construction and overhead) costs; and

b. Post-construction costs, including operation and maintenance necessary to ensure continued effectiveness of the alternative(s).

4. INTERIM REPORTING

The Permittee shall submit bi-monthly progress reports containing:

a. A description and estimate of the percentage of the CMS completed;

b. Summaries of all findings;

c. Summaries of all contacts with representatives of the local community, public interest groups, or State government during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Actions being taken to rectify problems;

f. Changes in personnel during the reporting period; and

g. Projected work for the next reporting period.

5. FINAL REPORT

According to the approved schedule proposed by the Permittee in the Corrective Measures Study Plan, the Permittee shall submit for EPA approval a Corrective Measures Study Report to EPA and the MDE. The report shall include:

a. An updated description of conditions at the facility and the nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Permittee shall update the information with respect to any response activities or interim measures which have or are being implemented at the Facility;

b. A recommendation for SWMU, or group of SWMUs, objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, EPA guidance, and the requirements of any applicable federal statutes or regulations;

c. The Permittee shall justify and recommend a remedy(ies) using technical, human health, and environmental criteria. These recommendations shall include summary tables which allow the alternative(s) to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors among the alternatives evaluated shall be highlighted. Information on all evaluated potential remedy(ies) shall be presented; and

d. The Report shall, at a minimum, include:

(1) A description of the Facility, site topographic map(s) and preliminary layouts;

(2) For the selected remedy(ies) include:

(a) Performance expectations, i.e., the selected remedy is expected to achieve the Media Cleanup Standards in the approved RCRA Facility Investigation Report;

(b) Preliminary design criteria and rationale;

(c) General operation and maintenance requirements;

(d) Long-term monitoring requirements;

(e) Design and Implementation Precautions:

(i) Special technical problems;

(ii) Additional engineering data required;

(iii) Permits and regulatory requirements;

(iv) Access, easements, right-of-way;

(v) Health and safety requirements; and

(vi) Community relations activities; and

(f) Cost Estimates and Schedules:

(i) Capital cost estimate;

(ii) Operation and maintenance cost estimate; and

(iii) Project schedule (design, construction, operation).

e. Upon review of the Corrective Measures Study Report, the Regional Administrator may require the Permittee to evaluate further, and report upon, one or more additional remedies or develop particular elements of one or more proposed remedies. Such further requirements will, if necessary, be incorporated into this permit via 40 C.F.R. §§ 270.41 or 270.42.

ATTACHMENT E

WASTE MINIMIZATION PROGRAM

I. MANAGEMENT INITIATIVE PROGRAM

The objective of this program will be to encourage employees to conscientiously strive to reduce waste. This program should consist of the following:

A. Employee Training

Training should be developed and implemented to increase employee awareness of operating practices that reduce both solid and hazardous waste generation. A training program should include:

1. Occupational health and plant safety,

2. Company regulatory compliance requirements, and

3. A statement of the company's approach to waste minimization and/or it's waste minimization plan.

B. Incentives

An incentive program should be developed and implemented to provide motivation and to boost employees cooperation and participation in waste minimization. This incentive program should include:

1. Providing incentives for the development of useful waste minimization ideas,

2. Providing recognition and financial awards for outstanding waste minimization programs, practices and/or suggestions, and

3. Implementing or revising the operational supervisory structure and/or management procedures.

C. Waste Audits

A program of waste audits should be developed and implemented to provide a systematic and periodic survey of the company's operations designed to identify areas of potential waste reduction. This program should include:

1. Identification of hazardous substances in waste and the sources of these substances,

2. Prioritization of various waste reduction actions to be undertaken,

3. Evaluation of some technically, economically, and ecologically feasible approaches to waste minimization,

4. Development of an economic comparison of waste minimization and waste management options, and

5. Evaluation of waste minimization modification results.

II. WASTE MINIMIZATION OPTION PROGRAM

This program should be developed to investigate, evaluate and recommend waste minimization options. This program should include a step-by-step analysis of waste reduction options, recycling options and finally, only after acceptable waste minimization techniques have been investigated and evaluated, waste treatment options.

A. Reduction Options

These options would be characterized as good operating practices (also know as good housekeeping practices), material and technology changes. These techniques avoid the generation of hazardous waste, thereby eliminating the problems associated with handling these waste.

1. Good operating practices

These practices involve the procedural or organizational aspects of a manufacturing process, and in some areas changes in operating practices, in order to reduce the amount of waste generated. These practices would include, at a minimum, the following elements:

a. Material handling improvements,

b. Scheduling improvements,

c. Spill and leak prevention,

d. Preventive maintenance,

e. Corrective maintenance,

f. Material/waste tracking or inventory control,

g. Communication documentation, and

h. Waste stream segregation according to toxicity, type of contaminant and physical state.

2. Material substitution practices

The purpose of these practices is to find substitute process/manufacturing materials which are less hazardous than those currently utilized and which result in the generation of waste in smaller quantities and/or of less toxicity.

3. Technological modification practices

These practices should be oriented toward process and equipment modification to reduce waste, primarily in a production setting. These practices can range from changes that can be implemented in a matter of days at low cost, to the replacement of process involving large capital cost. These modifications include changes in the following:

a. Processes,

b. Equipment,

c. Process automation,

d. Operation settings, including, but not limited to flow rates, temperatures, pressures, and/or residence times,

e. Water conservation, and

f. Energy conservation,

B. Recycling Options

These options are characterized as use/reuse and resource recovery techniques.

1. Use and reuse practices

These practices involve the return of a waste material either to the originating process or to another process as a substitute for an input material.

2. Reclamation practices

These practices differ from the use and reuse practices in that the recovered material is not used in the facility, rather it is sold to another company.

C. Treatment Options

These options should be oriented to the changes of physical, chemical or biological character of any hazardous waste in order to reduce the toxicity and the volume to render such waste available for storage and safer to manage.

D. Waste Exchange Options

These options are attempts to match the waste from one business with the raw material requirements of another business, thereby finding a market for what one business sees as a waste but what another business sees as a material.

Robert H Campbell
President
Chief Operating Officer
Chief Executive
Officer

Sun Company, Inc.
100 Matsonford Road
Radnor PA 19087-4597
215 293 6532

September 24, 1991

Mr. William K. Reilly
Administrator
U. S. Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Reilly:

Sun Company is pleased to inform you that it will participate in the Environmental Protection Agency's Industrial Toxics Project (ITP) for seventeen high priority chemicals.

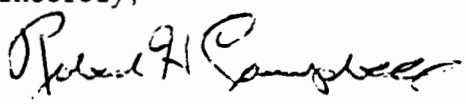
The five Sun refineries located in the U.S. and Puerto Rico, have collectively reported emissions for eight of the seventeen chemicals included in the program. It is Sun's goal to achieve a fifty percent reduction in the aggregate releases to the environment of these eight chemicals by the end of 1995 using actual releases from 1988 sources as the baseline. Sun intends to achieve this objective through an emphasis on source reduction; but closed loop recycling, product substitution, reformulation and treatment options will be included.

As a result of the Clean Air Act Amendments of 1990 (CAAA), Sun's refineries are actively pursuing the construction of facilities required to meet mandated fuel specifications. Sun assumes that the reductions it will make as part of the ITP will qualify as off-sets for new CAAA mandated plants, that incremental emissions from such new plants would not be added into the calculations for achievement of Sun's goal and that the recycling exclusion under SARA is continued. Sun anticipates that the implementation of the ITP will be sufficiently flexible to take into account any significant changes to business operations (e.g. plant closures, etc.). As you know, more sophisticated estimating and measurement procedures now enable industry to better quantify emissions. Sun's 1988 emissions for ITP will be recalculated using these procedures and will be higher than those initially calculated for the 1988 baseline.

Sun has a long history of promoting pollution prevention initiatives. Prominent examples include the construction of refinery sludge treatment facilities prior to RCRA and initiation of a new used oil recycling program in Sun's marketing heartland. Pollution prevention has been and will remain a high priority for Sun.

Sun and its employees are fully committed to these ongoing efforts to reduce emissions and we welcome the opportunity to participate in this important initiative. We believe that significant progress can be made if industry, the public and government work together to find practical ways to address environmental matters cooperatively and voluntarily. Sun will do its part to achieve these desirable environmental goals.

Sincerely,



Robert H. Campbell

RHC:aa

cc: Linda J. Fisher
Assistant Administrator
U.S. EPA, Washington

William Reilly
Special Programs Assistant
Air, Radiation & Toxics Division
U.S. EPA, Region III

CKECKLIST FOR SWMU RESPONSES PAD980550594

SUN PETROLEUM PROD. CO.

MKTCU

Name of Facility (UV) Refining +
EPA I.D # PAD 980 55693
Date Recieved 7/1/88

1. Is facility currently storing less than 90 days. YES ✓ NO _____

2. Did facility claim that they filed in error YES ✓ NO _____

3. Description/Number of SWMU's _____
   Land Disposal _____ Incinerators _____ Tanks _____
   Land Treatment _____ Surface Impoundments _____ Drums _____
   Other _____

4. Is there evidence of contamination YES _____ NO _____
   Groundwater: YES _____ NO _____
   Surface Water: YES _____ NO _____
   Air: YES _____ NO ✓

5. Certification YES ✓ NO _____

6. PRIORITY

HIGH----Reported evidence of release to air, ground or surface water.

MEDIUM--No releases reported but land based SWMUs reported.

LOW-----Everything else.

7. Comments:

Marcus Hook Refinery

SUN

Sun Refining and
Marketing Company
PO Box 426
Marcus Hook PA 19061-0426

June 30, 1986

PAD 980550594

Mr. Samuel Israel
United States Environmental Protection Agency
Region III
841 Chestnut Building
Philadelphia, PA 19107

Dear Mr. Israel:

The following is in response to Mr. Stephen R. Wassersug's letter of April 24, 1986 addressed to Mr. Joe Obold, Sun Petroleum Products. As we discussed by telephone on June 20, a copy of the Part B Application for the Solid Waste Management Units (SWMU) at this facility - Sun Refining and Marketing Company Marcus Hook Refinery - was copied to Ms. Shirley Bulkin, EPA III, on August 31, 1983. We believe that the information required is provided in the Part B submittal; however, should you need additional information, please contact me at (215) 447-1178 or Arthur J. Raymond at (215) 447-1175.

Very truly yours,
SUN REFINING AND MARKETING COMPANY

Richard E. Ware
Senior Environmental Engineer

REW:erh
cc: Mr. Wayne L. Lynn
R-016

In Reply Refer To: 3HW33

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Joe Obold, Vice-President
Sun Petroleum Products
P. O. Box 426
Marcus Hook, PA 19061

Re: PAD 980550594

Dear Mr. Obold:

Sections 3004(u) and 3008(h) of the Hazardous and Solid Waste Amendments of 1984 (RCRA Reauthorization) give EPA the authority to require corrective action for all releases of hazardous wastes or constituents from any solid waste management unit ("SWMU") as defined on the enclosed sheet. This requirement applies to operating units, inactive units, as well as those that are closing or have been closed in the past.

EPA and the State must first determine the location of all SWMUs at your facility. Next, we must determine whether or not any "releases" (see definitions) originated at these units. In order to enable us to make these determinations, you must provide the following information:

(1) A topographic map showing the facility and a distance of 1,000 feet around it, at a scale of one-inch equal to not more than 200 feet. In addition to showing the location of the hazardous waste management facilities for which you are seeking a permit, it must locate all existing and former SWMUs at your facility.

(2) For each SWMU, provide a description of the unit's functions, material of construction, dimensions, capacity, ancillary systems (piping), etc. If available, provide engineering drawings of the units and their foundations. For closed facilities, also provide

All information you submit should be certified as required by regulation 40 C.F.R. 270.11(d). Should you have any questions concerning this letter, please contact Samuel Israel at (215) 597-9809.

Sincerely,

Stephen R. Wassersug, Director
Hazardous Waste Management Division

Enclosure

cc: Mr. Wayne L. Lynn
Regional Solid Waste Manager
1875 New Hope Street
Norristown, PA 19401

Mr. Arthur Raymond, Env. Eng.
Sun Petroleum Products